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Student Reference

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Student Reference

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FOREWORD

This student reference, Agricultural Management and Economics, is designed to accompany the lessons outlined in the Agricultural Management and Economics instructor's guide. Development of this reference was suggested by the MVATA Teaching Aids Committee.

This reference should be of value to individuals interested in the study and application of economic principles and management analysis tools to numerous agricultural business decisions. The term agricultural business, used throughout this reference, refers to all businesses in agriculture including the farming operation.

The Agricultural Management and Economics Advisory Committee suggested the topics to be discussed and reviewed the materials. This reference consists of three units as follows: Unit I--Economic Principles in Agriculture; Unit II--Business Management; and Unit IV--Operating the Agricultural Business. The Missouri Farm Planning Handbook (Manual 75) is the reference for Unit III--Planning the Farm Business. Check the Table of Contents for a detailed listing of lessons. Each unit contains a listing of specific topics discussed in each lesson of that unit.

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UNIT I - ECONOMIC PRINCIPLES IN AGRICULTURE

Lesson 1: The Principle of Diminishing Returns

Michelle owns and operates a chemical spraying service. Business has been going well, and she is having trouble keeping up. Right now she can handle four jobs a day, but she has to work long hours to get her paperwork done. She knows there is enough business to expand.

Definition of Key Terms

Total product - Total product (TP) is the total output or yield. This is the first thing that Michelle must determine for her business. It will be the number of jobs done each day.

Marginal product - Marginal product (MP) is the change in output resulting from each additional unit of input. For Michelle's business it would be the change in the number of jobs completed each day (output) because of each additional worker (unit of input) that is hired.

Average product - Average product (AP) is the amount of output produced divided by the number of units of input. In Michelle's case, it would be the number of jobs done each day divided by the number of workers.

Diminishing Physical Returns

The principle of diminishing physical returns states that at some point in time the marginal product decreases with each additional unit of input. As additional units are added, they become less efficient. Michelle knows this. Since she has a limited amount of equipment and is serving a limited area, her company can only become so big. Because of these limits, her total product will also reach a limit. If she continues hiring workers, there will be less for them to add to the total product. Her concern is how many workers she should hire. An additional worker (a marginal input, or MI) will allow her to spend some time getting other things done. After hiring one additional worker her company can do seven jobs a day. Her marginal product (MP) is an additional three jobs. Her average product (AP) is the total amount of work divided by the number of workers ($7 \div 2 = 3.5$).

TABLE 1.1

Workers	Jobs/day	MI	MP	AP	TP
Michelle	4			4	4
one additional	7	1	3	3.5	7
two additional	9	1	2	3	9

What happens if she hires the second additional worker and gets nine jobs done per day? Notice in Table 1.1 that the marginal product is decreasing even though the total product is still rising. As more inputs are added, the gain in marginal product will decrease. Michelle's goal will be to use these numbers later to determine the best level of operation.

Diminishing Economic Returns

The principle of diminishing economic returns states that beyond some point marginal economic returns decrease with each additional unit of input.

Michelle had plenty of business, did she make any extra profit by expanding her business? The additional amount of work accomplished decreased with each employee. As the business nears its most profitable level of operation, the economic returns will also decrease as additional levels of input are added.

Michelle wants to pay each of her workers, including herself, $40 per day. Each job costs the customer $15 plus the cost of the chemicals. With this amount Michelle has to pay all the rest of her costs.

To be able to determine the most profitable level of operation for her business, there are a few more things that must be added to the table.

<u>Total revenue</u> - Total revenue (TR) is the total income from all the jobs.

<u>Total cost</u> - Total cost (TC) is the cost of each employee, excluding other business costs for now. Each employee receives $40 per day. The total cost per day is the number of employees multiplied by $40.

<u>Marginal revenue product</u> - Marginal revenue product (MRP) is the increase in income created by hiring another employee, therefore adding an additional input. It is used in the example because the inputs are increasing at a constant rate while the outputs are variable.

<u>Marginal input cost</u> - Marginal input cost (MIC) is the increase in total or variable costs with each additional unit of input. In the example, the MIC is the $40 cost divided by each additional worker, or 40 ÷ 1. Michelle should continue to hire workers as long as MRP is greater than MIC.

TABLE 1.2

Workers	Jobs/ day	MI	MP	AP	TP	TR	TC	MRP	MIC
Michelle	4	XXX	XXX	4	4	60	40	XXX	XXX
one additional	7	1	3	3.5	7	105	80	45	40
two additional	9	1	2	3	9	135	120	30	40

Table 1.2 shows that Michelle should only hire one additional employee because the marginal revenue product is less than the marginal input cost when the second additional worker is hired.

The concepts described above are very important for persons in any business, including agriculture. These concepts are used to help the owners or managers determine the most profitable level at which they can operate. Michelle, as well as other managers, can use these concepts to help determine what the production level should be for her business.

Maximum Profit

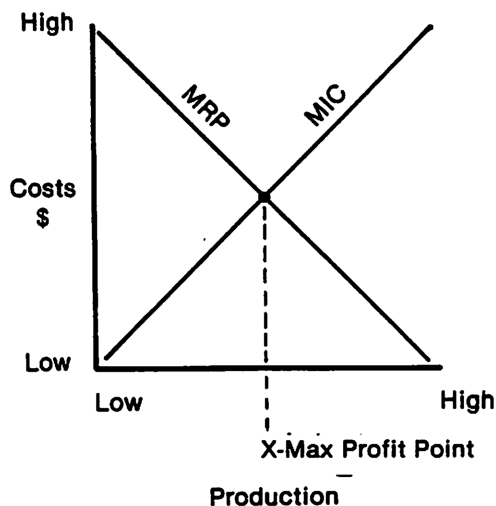
Maximum profit occurs when the net economic returns are at their greatest point. This is when MIC = MRP. At that level, if any more input is added, it will cost more than the gain realized. If less inputs are used, then the opportunity to increase earnings is being passed by.

As determined with Michelle, maximum profit would be reached with one additional employee. If Michelle hired a third employee, the marginal revenue product would be less than the marginal input cost.

Maximum Production vs. Maximum Profit

Maximum production is when production is at its highest possible level. Maximum profit occurs when net economic returns are at their highest point, or MIC = MRP. Maximum profit always occurs at a level of production that is lower than maximum production.

FIGURE 1.1 - Maximum Production vs. Maximum Profit



MIC - Marginal input costs increase with the amount produced.

MRP - Marginal revenue product decreases with the amount produced.

MIC = MRP - This is the point of maximum profit.

Summary

In any business, production can be increased by adding inputs of land, labor, capital and management. However, for the business to operate at its maximum profit potential, it must be able to determine when marginal input cost becomes equal to marginal revenue product.

Credits

Profit Maximizing Principles. Ohio State University: Agriculture Education Service, 1970.

Osburn Donald D.; Kenneth C. Schneeberger. Modern Agriculture Management. Reston, VA: Reston Publishing Co., Inc., 1983.

Lesson 2: Fixed and Variable Costs

Modern transportation has several benefits that did not exist a century ago. Along with these benefits, there are several costs involved. Most families have more than one car. How many of you have your own car? If you don't, can you use the family car? What do you have to pay for? What are the other costs involved?

Fixed Costs

Fixed costs are incurred regardless of the level of production or use. They are also referred to as ownership costs or overhead costs. For example, if Bob borrowed the money to buy his car, then his payments and car license would be fixed costs. No matter how little or how much he uses the car, he still has to pay those costs. What are other types of fixed costs?

Types of Fixed Costs

Every business incurs five types of fixed costs. Even the car you drive has these expenses. These expenses are referred to as the DIRTI five.

Depreciation - This is the loss of value each year due to causes such as wear, age, or obsolescence. Even if it is never driven, a car will still decline in value because newer models are coming out with newer and nicer features. Most people would prefer to drive the new car.

Interest - The cost of using money is called interest. If you borrow money you pay interest. If you put money in a bank they pay you interest. Also, there is cost associated with the use of your own capital in business, rather than investing the money in an interest bearing account.

Repairs and shelter - Repair and shelter costs incurred to slow down wear caused by weather and time are fixed costs. These costs are different from depreciation, because depreciation costs are related to the original investment. Shelter costs are related to housing costs and maintenance. Some repair costs are fixed, while others are variable. Repairs associated with the use of an item are variable costs. However, repairs required even though an item has not been used are fixed costs.

For example, if Bob places his car in the garage when he is not using it, he can prevent damage to his car from the effects of weather such as hail storms. If he does preventative work on his car on a regular basis he can avoid costly breakdowns later. These examples can be considered repair and shelter costs and will occur regardless of how often he uses the car.

Taxes - Property taxes are collected on an item each year regardless of whether it has been used.

Insurance - Insurance is a tool to help manage risk. Risk is the uncertainty managers face. A manager pays a premium for insurance, and the insurance company will reimburse him if a major loss occurs. The insurance premiums on a car are constant regardless of miles driven.

Variable Costs

Variable costs change in direct relationship with the production level or the amount of use. The more the item is used, the more the total variable costs will be. For example, gasoline for a car is a variable cost. There is a considerable difference in total fuel cost if one drives 50 miles per week or 500 miles per week.

Most people are concerned with variable costs. They will shop around at different stores comparing prices, trying to find the best deal. Where do you buy your gas? Do you buy it at the first gas station you come to, or do you drive a few blocks further where it is slightly cheaper?

Some examples of variable costs in an agribusiness include labor, rent, fertilizer, feed, seed, and utilities.

Variable Costs Becoming Fixed

Once an item is bought, that item becomes a fixed cost. The money is already spent; it cannot be spent somewhere else. If someone is on a long trip and has to pay more for gas at a station than usual and a few miles later that person sees a station that is a lot cheaper, what can they do? There is not much they can do because the tank is already full.

Total Cost

The total cost of producing any product is the sum of the fixed costs and the variable costs. A product can be anything produced and sold or bought and resold. It can also be a service that a business provides.

Total costs exist in any industry. Consider swine production for example. What are the fixed costs? There is depreciation on the facility whether it is an expensive farrowing barn or an individual house. There is interest that must be paid on borrowed money or money that could be invested elsewhere.

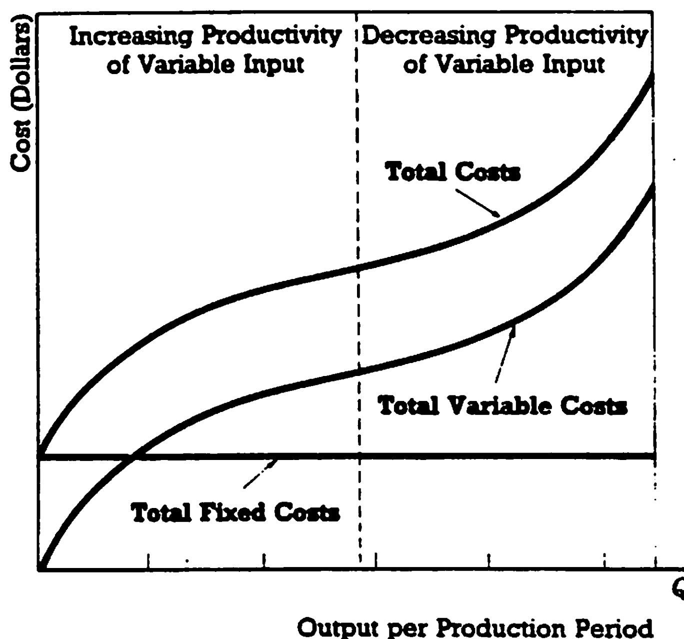
Weather and time can be quite destructive to buildings and equipment. Therefore, repairs will have to be made. Taxes have to be paid on the property, as well as on any net income. Insurance has probably been taken out on the facilities, especially if money has been borrowed. If money hasn't been borrowed, there is a lot of risk being taken that could be a very large cost later. Those are the fixed costs.

What about the variable costs such as electricity, labor, feed, veterinary

supplies, and the many other expenses of raising swine? They have to be added to fixed costs to get the total cost.

FIGURE 2.1 - Total Cost

Total cost, total variable cost, and total fixed cost curves



Source: Modern Agricultural Management, page 49

In Figure 2.1 see how total fixed costs stay the same at all levels of production. Notice that the total variable costs are changing. Why is it a curved line? The line is curved because total variable costs change with different levels of production. Notice that the distance between the total variable cost curve and the total cost curve is the same at all levels of production. Total cost is equal to variable costs plus fixed costs. Since fixed costs are the same at all levels, the distance between the curves is the same.

Per-Unit Costs

The concept of per-unit cost can be very helpful in making business decisions. Per-unit costs are used because they reduce values to equal units such as tons, acres, or bushels. This allows the manager to compare different situations more easily.

For example, if Danielle planned on raising some corn, she would need to know certain per-unit costs to determine if raising corn is feasible. She has 40 acres of land that can be used for planting corn. Her fixed costs will be $3,400 whether she plants one acre or all 40 acres, but her fixed cost per acre will be less when she plants more acres. Past records show that this

particular 40 acres will normally produce 110 bushels of corn per acre with $95 in variable costs per acre.

Average variable cost - Average variable cost (AVC) is the total variable cost divided by the quantity, or TVC/Q. This gives a per-unit variable cost.

Danielle's total variable cost per acre is $95. Her quantity is 110 bushels. Her average variable cost would be $95/110 bushels, which equals $.86 per bushel.

Average fixed cost - Average fixed cost (AFC) is the total fixed cost divided by the quantity, or TFC/Q. It shows the average fixed cost per unit.

Danielle's total fixed cost is $3,400. By planting all 40 acres, her fixed cost per acre is $3,400/40 acres, or $85 per acre. Her average fixed cost per bushel is equal to $85 per acre/110 bushels per acre, or $.77 per bushel. If she only planted 20 acres, her fixed costs per acre would be much higher. It would be $3,400/20 acres = $170. Her average fixed cost per bushel would be $170 per acre/110 bushels per acre, or $1.55 per bushel.

Average total cost - Average total cost (ATC) is the total fixed cost plus the total variable costs divided by the quantity, or (TFC + TVC)/Q, or TC/Q. It shows the average total cost per unit.

If Danielle decides to plant all 40 acres, her average total cost (ATC) is equal to her total costs, which are $85 fixed costs per acre plus $95 variable cost per acre, divided by her quantity of 110 bushels per acre. This is $180/110, or $1.64 per bushel. For Danielle to pay her fixed and variable cost in this problem, the price of corn must be at least $1.64 per bushel. By looking at per-unit costs, she can compare different enterprises that have different costs to find what is best for her situation.

Many times the per-unit cost curves may be more important in decision making than the total cost curves. In general, most producers are interested in having a low per-unit cost in relation to the units they are selling.

Short Run vs. Long Run

The short run is a period during which certain inputs or resources are fixed and others are variable. It can be thought of as a growing season or a production cycle. Only the level of variable inputs can be changed. One can change the amount of labor hired, the amount of gas used, the amount of fertilizer used, and other such things. Production will continue in the short run as long as all variable costs are being met in order to minimize losses.

In the long run all resources are variable. There are no fixed costs. The long run is long-range planning for future needs. Should the business expand? Does it need more or less land? What are the equipment and facility needs? Should the manager move from a less profitable to a more profitable business?

These are all questions that can be addressed in the long run. In the short run, one would continue to operate as long as variable costs are covered. In the long run, returns must exceed both fixed and variable costs for the business to succeed.

Summary

The manager should consider two types of costs. These costs have direct effects on business decisions. In the short run these costs can be classified as fixed or variable. Variable costs are very important because as long as managers can meet these costs, they will continue to operate. In the long run, all costs are variable and will have to be met for the business to succeed.

Credits

Profit Maximizing Principles. Ohio State University: Agriculture Education Service, 1970.

Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agriculture Management. Reston, VA: Reston Publishing Co., Inc., 1983.

Lesson 3: Substitution of Inputs

There are sometimes several ways to reach the same goal. In the first lesson, the principle of diminishing returns was used to help determine the best level at which to operate the business. The second lesson dealt with fixed and variable costs and showed that understanding the relationship between these costs is important to any business manager.

Now the goal is to determine the best combination of inputs that can be used in a business without changing the level of production or increasing costs.

Substitution

Substitution is replacing one input with another in an attempt to increase profit. People have been using substitution all through time. Hand labor was replaced with animals to do heavy work like plowing and hauling. Many centuries later, tractors and trucks began to replace the oxen, horses, and wagons. As years went by and time and labor became more critical, it became more feasible to use newer inventions.

Substitution also works for other things, like substituting feed ingredients to form a good ration at the cheapest price or using machines to replace labor in certain jobs.

Determining Maximum Profit

The manager wants to organize the business such that inputs cannot be added or subtracted from the business without decreasing profit. This condition exists at the best level of input substitution.

Determining maximum profit by substitution is related to the principle of diminishing returns, in which inputs could only be added up to a certain level without decreasing profit.

Methods of Substitution

Constant substitution - Constant substitution is when one resource can be substituted for another at the same rate for each additional unit of input. For example, many swine producers feel that milo can be substituted for corn in a hog ration on a pound for pound basis. If this is true, a farmer would want to feed whichever grain is cheapest when price is compared on an equal unit basis.

Variable substitution - Variable substitution is when one resource can be substituted for part of another at different rates for each additional unit of

input. For example, the business firm decides to add machines to replace some of the workers. They predict the following results. (Table 3.1)

TABLE 3.1

Number of Workers	Number of Machines
25	0
18	1
13	2
10	3
8	4

The first machine replaced seven workers, but the second machine only replaced five, and the third machine only replaced three workers. The fourth machine only replaced two workers.

Calculating the Best Rate of Substitution

Calculating the best rate of substitution is a matter of finding out how much may be gained and how much may have to be given up with each level of substitution. The first step is to determine the marginal rate of substitution (MRS) at each level.

$$MRS = \frac{\text{number of units replaced}}{\text{number of units added}}$$

Now the business firm can determine its marginal rate of substitution.

TABLE 3.2

Number of workers	Number of workers replaced	Number of machines	Number of machines added	Marginal rate of substitution
25		0		
	7		1	7/1 = 7
18		1		
	5		1	5/1 = 5
13		2		
	3		1	3/1 = 3
10		3		
	2		1	2/1 = 2
8		4		

The next step is to determine the price ratio of the added and replaced inputs. The price ratio is:

$$PR = \frac{\text{price of added unit (machine)}}{\text{price of the replaced unit (worker)}}$$

If the cost of a worker is $250 a week and the cost of owning and operating the machine is $1,000 a week, what is the price ratio?

$$PR = \frac{\$1,000}{\$\ 250} = 4$$

Determining the Best Rate of Substitution

To determine the best rate of substitution, the marginal rate of substitution (MRS) must be compared to the price ratio (PR). The best level is where the marginal rate of substitution equals the price ratio. This is the most profitable combination of input use.

How many machines should this firm substitute? Compare the marginal rate of substitution in Table 3.2 with the price ratio of 4. They should only substitute two machines because if they use more, the marginal rate of substitution will be less than the price ratio.

The firm must be sure that it has enough capital available for the purchase and operation of the machines. Over time, it will become evident that purchasing the machines will be possible because the firm can reduce its labor costs more than the cost of owning the machines.

What happens if prices change, causing the price ratio to change? Labor prices and inflation, along with other factors, might cause a change in the price ratio. If that happens, the new price ratio will have to be compared with the marginal rate of substitution to find the new best level of substitution.

Summary

An efficient manager may be able to increase the firm's profits by being aware of substitution. The level of substitution is determined by comparing the marginal rate of substitution (MRS) with the price ratio (PR) and substituting when MRS > PR. The best level of substitution is when MRS = PR.

Credits

Profit Maximizing Principles. Ohio State University: Agriculture Education Service, 1970.

Principles of Agricultural Decision Making. Columbia, MO: University of Missouri-Columbia Instructional Materials Laboratory, 1975.

Mortenson, W.P.; R.A. Luening. The Farm Management Handbook. Danville, IL: Interstate Printers and Publishers Inc., 1979.

Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. Reston, VA: Reston Publishing Co., Inc., 1983.

Lesson 4: Opportunity Costs

It is Wednesday night and Kent has a date with that special person, Katie. However, Friday night was the only time Katie could be available. Kent has to work Friday night at the grocery store. He is supposed to be there from 5 p.m. until 11 p.m. That is six hours at $4 per hour. A friend is willing to work Kent's hours for the money, so he has that part worked out. But he still has to pay for gas and at least his share of the evening. It turns out to be quite a bit, especially when the $24 given up from not working is considered.

Opportunity Costs

Opportunity cost is the return that could be obtained if a resource were used in the next best alternative. In the previous example, Kent had a chance to date someone he really wanted to; however, to go on the date, he not only had to pay for the date but he also had to give up the opportunity to work and earn money.

Opportunity costs for a business are determined in the same way. A business is faced with two alternatives for investing its money. A bank may be willing to pay 6 percent interest. A certain stock may pay 9 percent. If the business places its money in the bank, the opportunity cost is the 9 percent that it could earn on the stocks.

If Kent had five 100-dollar bills to invest to achieve the following returns, where would he invest his money? He has to invest in the first increment before he can invest in the second.

TABLE 4.1

Unit of money	Lawn Service	Rabbits	Bank
1	110	115	106
2	125	120	106
3	112	121	106
4	105	105	106
5	98	95	106

What would be the opportunity cost of putting all the money in the bank?

If all the money is put in the bank, there would be a return of $530. If Kent invests the money where it will be the most profitable, he would invest the first three units in rabbits. He would then move to the lawn service because the first unit of the lawn service returns more than the fourth unit of rabbits.

In this example all five units could be invested for more than the bank would return. The most profitable return would yield (115 + 120 + 121) + (110 + 125) = 591. The opportunity cost of investing all the money in the bank would be $591, which would be given up. How many units would have to be invested until the bank becomes a feasible investment?

Net opportunity costs - The net opportunity cost is used by some people to compare the two alternatives. Net opportunity costs are defined as the difference between what is invested in and the alternative that is not chosen. In the above example, it would be the difference of the $591 from the most profitable investment minus the $530 from the bank, or $61. ($591 - $530 = $61)

Effects on Business Decisions

All business decisions involve limited resources: land, labor, and capital. Each business must be able to decide the proper mixture of each of these resources to continue earning a profit.

Resources are limited because of opportunity costs. There may be more of the resources available, but economically, it is not in the best interest of the company to add that resource. The company can make more money by investing its money (capital), labor, or land in another enterprise when one of the other areas becomes limiting.

For example, a manager may have the time and labor to paint the building every year, but the company's capital might be better spent on advertising and publicity. It may be worth more to the business to spend the money on advertising and publicity to enhance sales than to spend it on painting the building each year as a benefit.

Another reason why resources are limited is that several businesses are competing for this set of resources. There is only a limited amount of land available, especially land that is suited for certain businesses. Labor can become limiting because of a lack of properly trained people in a certain area. Capital can become limiting as each business borrows money, causing the interest rates to eventually increase, which makes it less profitable to borrow money.

The job of the manager is to find the right combination of all these components that will best suit the business's needs.

Failure to Consider Opportunity Costs

Times do change, and if managers are going to continue to be successful, they must be willing to change with the times. What was considered practical and economical just 20 years ago may end in failure today. The real question today is, how can the manager stay in control of the situation?

If a manager fails to consider the opportunity costs of a decision, that manager may be missing an opportunity to make a greater profit. By staying aware of the opportunity costs, the manager is hoping to avoid costly mistakes while trying to keep the business as profitable as possible.

Measures Used to Represent Opportunity Costs

Since nearly all resources become limited at some time, there needs to be some way to represent opportunity costs of separate investments.

When the opportunities available require different amounts of investment, they are measured by return on investment (ROI). ROI can be used to compare investments because it reduces the measure of return to a percentage instead of actual dollars. For example, if investment A returns $700 for a $600 dollar investment, there would be a gain of $100. If investment B returns $1,100 for $1,000 invested, it would also have a return of $100. Which is the best investment? They both return $100. However, because investment A has a return of 100/600 or .167 and investment B only returns 100/1,000, or .10, investment A is the best choice (.167 > .10).

Net returns are often used when different investments require the same amount of investment. Recall Table 4.1 presented earlier in the lesson. Net returns were used with each level of investment to determine the most profitable mixture of investments. Because all investments are made in equal units, there is no need to convert to ROI to determine which investments are most profitable.

Summary

All decisions have some costs associated with them, and the opportunity costs for making those decisions need to be considered. Opportunity cost is the return that could be obtained if the resource were used in the next best alternative. The rate of return on investment is a good indicator of which alternative is the best choice. All decisions that involve the use of scarce resources are affected by opportunity costs.

Credits

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Lesson 5: Supply and Demand

Cindy is a cattle buyer from a large Midwestern feedlot. Her job is to travel to different auctions in the area and buy certain types of cattle depending on the feedlot's need. How does she know what is a fair price to pay? Why does the price change so much from week to week? Are there things to be concerned with when trying to predict the price a month away? She is buying cattle all year long. Therefore, she needs to be able to plan ahead as well as meet the feedlot's present needs.

Demand vs. Quantity Demanded

Demand for an agricultural commodity like cattle, hogs, or grain is the amount buyers are willing and able to purchase at different prices and at a given time and place. Demand is the first component of price. Many people may be willing to buy a new car now, but if they are not able to, they have no effect on demand.

Quantity demanded is how much buyers are willing and able to buy at each specific price. As the price changes, the quantity demanded will change.

Supply vs. Quantity Supplied

Supply is the amount of product or commodity producers are willing and able to provide at different prices and at a given time and place. Supply is the second component of price. Buyers may be very willing and able to buy a product (demand), but if there is a limited supply, the price will increase.

Quantity supplied is how much suppliers are willing and able to provide at each specific price. As the price changes, the quantity supplied will change.

Determining Price

Price results from the interaction of the forces of supply and demand. If demand increases without a change in supply, price will go up. If supply increases without a change in demand, price will drop. How does this affect the price of cattle? Consider one step at a time.

If there were a severe drought in a cattle-producing area, what might happen? The price of feed would most likely increase as cattle producers start buying more feed, causing less to be available. If the feed becomes too high-priced or unavailable, producers will start selling their cattle sooner. Then there will be more cattle on the market than the feedlots are willing to buy. If one group is trying to sell and the other group is not willing to buy, the price will drop until someone becomes willing to buy. In this case, there has been an increase in supply without a change in demand.

What happens if there is an increase in demand? Cindy's feedlot just sold several tons of meat to Japan to be delivered in a few months. Her company now has a greater need for cattle. Now she may have to pay more to get the cattle because she is competing with other buyers. This may cause the buyers to pay more. An increase in demand without a change in supply will cause an increase in price.

These are just two examples of factors affecting supply and demand. Actually, there are many things happening that affect supply and demand at the same time. These things often involve events that are happening around the world. This interaction is how prices are determined.

Law of Demand

The Law of Demand states that when the price of a product is increased with no change in factors other than price, less of the product will be purchased. Lower prices mean that more of a product will be purchased. High prices result in a lower quantity demanded and lower prices will increase the quantity demanded. The Law of Demand can be depicted by a demand schedule and illustrated by a demand curve.

A demand schedule is a set of prices and the corresponding quantities of an item that would be purchased at each price at a given time and place. For example, if hamburger was offered for sale at each of the prices listed in Table 5.1, Jerry would be willing to purchase the number of pounds of hamburger that correspond with each price level. This would be his demand schedule for hamburger.

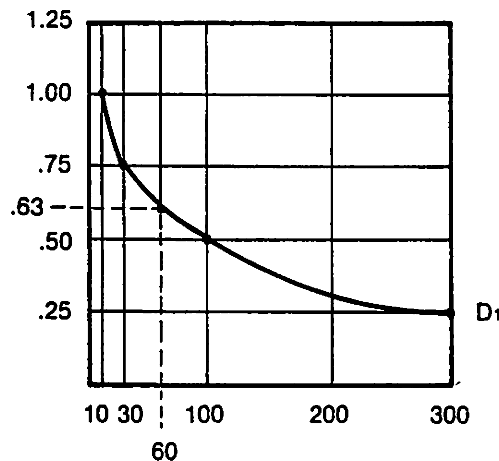
TABLE 5.1 - Demand Schedule for Hamburger

Price/pound	Pounds bought
$1.00	10
.75	30
.50	100
.25	300

If hamburger was being sold for 50 cents per pound, Jerry would be willing to purchase 100 pounds of hamburger. However, if the price of hamburger in the supermarket increased to 75 cents per pound, the quantity of hamburger demanded by Jerry would be reduced to 30 pounds.

The demand schedule can be plotted on a graph as illustrated in Figure 5.1. By plotting the quantity of hamburger demanded by Jerry at each price level and connecting those points with a smooth line, a demand curve can be produced. The demand curve is simply a graphic illustration of a demand schedule. Each point along the demand curve can be used to estimate the quantity of hamburger which Jerry would purchase at each price level. For example, if the price of hamburger were 63 cents per pound, Jerry would purchase 60 pounds of hamburger.

FIGURE 5.1 - Demand Curve



Demand Shifters

<u>Consumer income</u> - With a change in per capita income, or average income per person, there is bound to be a change in demand. If people have more money to spend, they will usually be more willing to buy an item. With several people buying more of a limited number of the same item, the demand will increase.

<u>Population</u> - As the number of people trying to buy the same item increases, the demand for that item will also increase.

<u>Individual taste</u> - Some consumers will buy a product because it is needed or because it is a "slight" luxury. Others will buy a product because it fits into their lifestyle. It is the "in" thing to have or to serve. This is harder to measure exactly and may change relatively quickly. Still, it can be a useful tool for predicting the success of a new product or determining how valuable a proven product is.

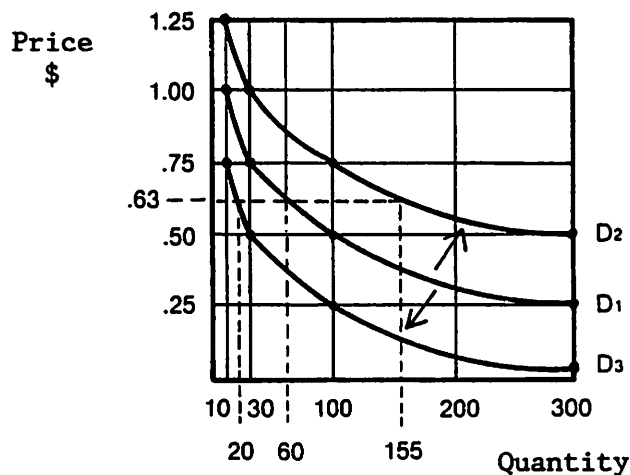
<u>Competing products</u> - If the price of a competing product is much lower than what is usually paid, eventually someone will try the competing product. If consumers stay with the new product, this will lower the demand for the old product. Manufacturers use this as a tool to build demand for their products. They will offer coupons, taste improvements, and better results to gain customers.

<u>Consumer expectations</u> - Expectations play a special role as demand shifters. Because it is hard for producers to predict rapid changes in expectations, it can be difficult to always supply exactly what consumers want. Most consumers buy for only a limited amount of time - a few days or a week or two. Very few consumers buy and store products such as food for much longer than that. If consumers expect a price increase, they are much more likely to stock up. If they expect a price decline, they may hold off larger purchases. If enough people react the same way at the same time, it can have a direct effect on demand and thus price.

Advertising and promotions - Advertising and promotions are ways of trying to increase consumers' awareness and desire to have a certain product. Some methods used are television and radio commercials, magazine ads, and billboards. Promotions include such things as free trial samples and giveaways.

When the price of goods and services change, the quantity demanded changes along the demand curve. However, the "demand shifters" described above will cause the entire demand curve to shift in one direction or another (see Figure 5.2). In the case of an increase in demand, the quantities demanded at each price level will have increased. Then the entire demand curve will shift upward and to the right (D_2). A decrease in demand would be reflected by a demand curve which shifts downward and to the left (D_3).

Figure 5.2 - Shifts in the Demand Curve



Using the original demand curve (D_1), Jerry would have purchased 60 pounds of hamburger per year at a price of 63 cents per pound. If beef promotions, advertising, and Jerry's preference for hamburger (i.e. demand shifters) caused his demand for hamburger to shift to D_2, then he would be willing to increase the quantity of hamburger he purchased in a year to 155 pounds.

Other factors could cause a decrease in Jerry's demand for hamburger. If the Food and Drug Administration (FDA) reported that excessive consumption of red meat contributed to heart disease, then Jerry's demand curve for hamburger may shift to D_3. Then, if the price of hamburger remained at 63 cents per pound, Jerry would reduce his purchases to only 20 pounds per year.

Keep in mind that the factors which influence demand are constantly changing. It is difficult to accurately predict the demand for a product. However, an understanding of the concept of demand and factors which influence demand are important in the study of economics and management.

Law of Supply

The Law of Supply states that when the price of a product is lowered with no change in factors other than price, less of the product will be supplied. Conversely, if the price of a product is increased, a larger quantity of the product will be supplied to the market. The Law of Supply can be depicted on a supply schedule (Table 5.2) or illustrated by a supply curve (Figure 5.3).

A supply schedule is a listing of the amount of a product that the industry is willing to offer for sale at different prices. The following table is a supply schedule for hamburger.

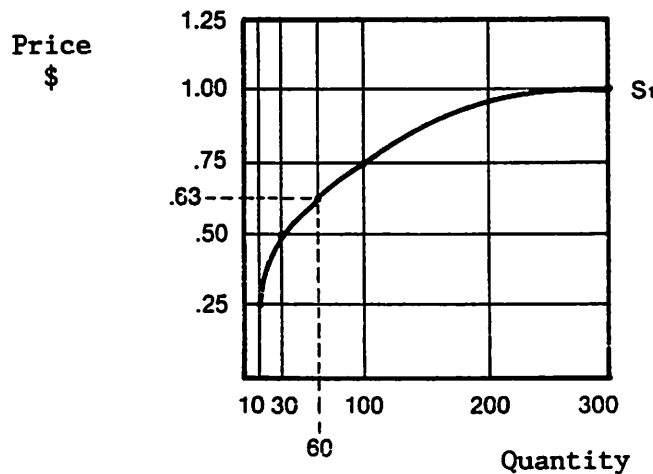
TABLE 5.2 - Supply Schedule

Price	Number Offered for Sale
$1.00	300
.75	100
.50	30
.25	10

A supply curve is simply a graph illustrating a supply schedule. Notice that the supply curve is plotted in the opposite direction of the demand curve.

Using Figure 5.3, notice that a supplier would provide 30 pounds of hamburger for sale if the price were 50 cents per pound. If the price were reduced to 25 cents per pound, the supplier would only be willing to provide 10 pounds of hamburger. If the price were to increase to 75 cents per pound, the supplier would be willing to increase the quantity supplied to 100 pounds. Similar to a demand curve, a supply curve indicates the quantity of a product which suppliers are willing to provide at various price levels.

FIGURE 5.3 - Supply Curve



Supply Shifters

Suppliers' expectations - Suppliers are constantly trying to determine the best strategy for the future. If they expect an increase in price, they will try to increase production.

Natural forces - Nature has often caused big changes in the supply of agricultural products. Floods are capable of locally destroying an entire growing season in a few minutes. Droughts can severely reduce the amount harvested. If enough natural forces affect the whole country at the same time, they can shift the supply curve.

Storage and perishability - These qualities of a product are also key factors. Today a lot of grain is stored at harvest when the price is normally the lowest. After harvest, the price will begin to rise, causing some of the stored grain to be sold. This helps add stability to the price. It is much harder to store perishable items such as fresh fruit and vegetables. This may cause dramatic changes in the price of perishable items because it is much harder to control the supply.

Price of other goods - Sometimes a change in the price of other goods can cause a shift in supply. Suppose there is a severe shortage of grain sorghum this year. Because grain sorghum is used in several livestock feeds, there is a strong demand for it. When it is in short supply or becomes expensive, feed manufacturers will substitute another grain for it. If there is enough substitution, the supply of the new grain will be reduced, causing some increase in price.

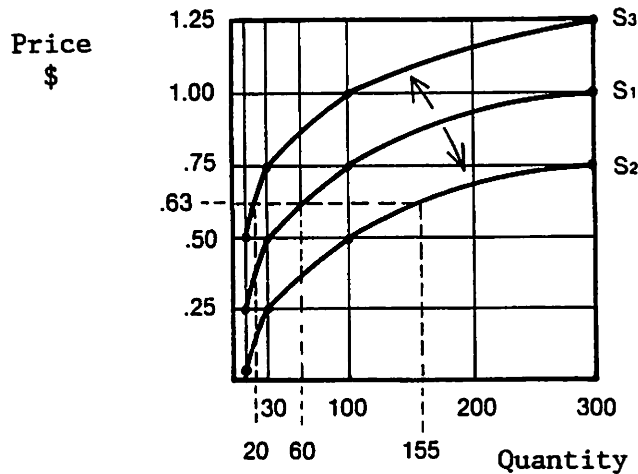
Technology - Another important factor has been the advancement in technology. With the dramatic changes over the past few decades, there has been a huge increase in the amount of crops produced from each acre of land.

Government programs - Often the government will develop policies to try to control supply. By controlling the supply, the government attempts to increase prices of agricultural products.

When the price of goods and services change, the quantity supplied changes along the supply curve. However, the "supply shifters" described above will cause the entire supply curve to shift in one direction or another (see Figure 5.4).

If certain events caused supply to increase, then the supply curve would shift to the right (S_2). At each price level the amount of hamburger each supplier would be willing to provide to the market would be increased. A decrease in supply can be illustrated by a supply curve (S_3) which has shifted to the left. The result of a decrease in supply would be that at each price level suppliers would be willing to provide a smaller quantity of hamburger for sale.

FIGURE 5.4 - Shifts in the Supply Curve



Using the original supply curve (S_1), Frank would have supplied 60 pounds of hamburger if the price were 63 cents per pound. If a beef shortage occurred in the United States, the supply curve for hamburger would shift to the left (S_3), and Frank would then provide only 20 pounds of hamburger.

Assume that a new packaging technique extended the shelf-life of hamburger. This new technology would shift the supply curve to the right (S_2) and increase the quantity that suppliers were willing to provide the market at each price level. In this example, Frank would be willing to supply 155 pounds of hamburger if the price were 63 cents per pound.

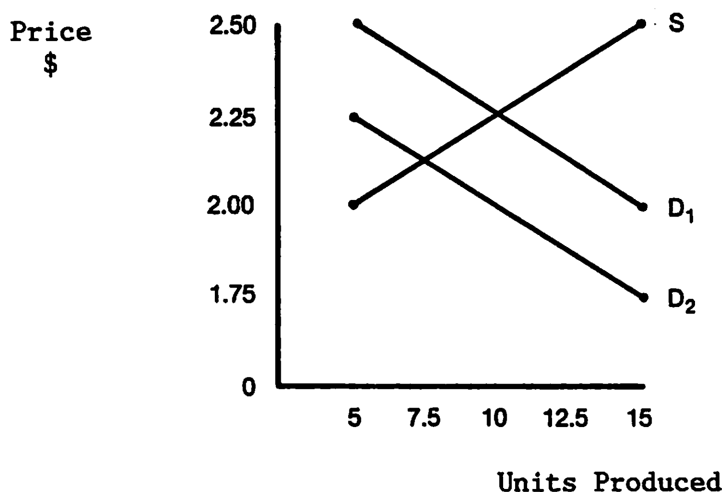
As with demand, remember the factors which influence supply are constantly changing. Understanding the Law of Supply is important in the study of economics and management.

The Equilibrium Point

Supply and demand curves go in opposite directions. What would happen if these lines were placed on the same graph? Somewhere they would have to cross. That point is the equilibrium point.

At the equilibrium point there is a balance between the quantity supplied and the quantity demanded. This is how price is determined in the free market. If there is a change in either supply or demand, there will be a new equilibrium point. If the price is high, the quantity supplied will be greater than the quantity demanded, and a surplus will develop. If the price is low, a shortage will develop and cause the price to be pulled up to the equilibrium point. This is how free markets are able to move volumes of products through at a market-clearing price, which is a price at which quantity supplied equals quantity demanded.

FIGURE 5.5



Note that the equilibrium price for D_1 and S is $2.25. At this price 10 units will be bought. If the price increased to $2.50 without a change in supply or demand, only five units would be purchased. If the demand changes to D_2, a new equilibrium point will be reached at 7.5 units.

Elasticity

Elasticity is the measure of how sensitive the market is to change in price or quantity. It changes for different items and is affected by several factors. There are three types of elasticity: inelastic, elastic, and unit elastic.

Inelastic - This is when the change in price is greater than the relative change in quantity. In other words, the price changes drastically and consumers will still buy nearly the same amount. These are the necessity items. Necessity items are things the consumers need for their health or well-being. An example is insulin for a diabetic.

Elastic - This is when the change in price is less than the relative change in quantity available. With elastic items a small change in price can have a huge affect on sales. Elastic items tend to be classified more as luxury items. A store can often reduce their prices by 15 percent and actually make more profit. Why? Because consumers are willing to respond to a change in price, they are more likely to buy when they feel they are getting a good deal. This will increase quantity sold. The difference in quantity sold offsets the reduced price.

Unit - This is when the change in price is equal to the relative change in quantity available. Unit elasticity only exists under special conditions. If the store has a sale, the reduction in price will be exactly offset by the increase in total revenue. If there is an increase in price, the increase will exactly offset the loss due to fewer items sold.

The three types of elasticity are influenced by several factors.

1. Ability of products to substitute for each other
2. Increase or decrease in supply
3. Increase or decrease in demand
4. Income changes in the population which buys the products
5. Price increases or decreases demanded by buyers and sellers

Goods Demanded by Consumers

Luxury items - These are goods or services that are generally considered nonessential to the survival or well-being of the individual. It may be very desirable to drive a fancy sports car and to eat steak every day; however, one will survive without doing so.

Necessity items - These are goods or services that are generally considered essential to the survival or well-being of the individual. These items include such things as shelter, food, safety, basic clothing, and needed medications.

In good times, consumers will spend more on luxury items than they will in hard times. When they have plenty of money, consumers will eat more steak. When they have less money, they buy less steak and eat more hamburger.

Demand Price Elasticity vs. Supply Price Elasticity

Price is affected by demand and supply. Elasticity is the responsiveness to these factors. After a price change, consumers will change their buying habits. The amount of change is measured by demand elasticity. The amount suppliers will change their production levels, due to a change or expected change in price, is measured by supply price elasticity.

Demand price elasticity is equal to:

$$\frac{\%\text{ change in quantity demanded}}{\%\text{ change in price}}$$

It is often more convenient to write it as:

$$E_d = \frac{(Q_2 - Q_1) \div Q_1}{(P_2 - P_1) \div P_1}$$

E_d = demand price elasticity
Q_1 = original amount demanded
Q_2 = new amount demanded
P_1 = original price charged
P_2 = new price charged

Here is an example. The price of a movie ticket is $4, and the theater decides to lower it to $3. The attendance increased from an average of 20 people per movie to 30 people per movie. Was this a good management decision? The formula is calculated as follows:

$$E_d = \frac{(Q_2 - Q_1) \div Q_1}{(P_2 - P_1) \div P_1} = \frac{(30 - 20) \div 20}{(3 - 4) \div 4} = \frac{10 \div 20}{-1 \div 4} = \frac{10}{20} \times \frac{4}{-1} = \frac{40}{-20} = \frac{4}{-2} = -2.0^*$$

*Demand price elasticities are always negative.

What does an elasticity of 2.0 mean? If the absolute value of the number is larger than one, it means that there is an elastic demand and total revenue will increase with a cut in price as more people come. If the number is less than one, it would be inelastic, and total revenue would decrease because there would not be enough people to make up for the difference in price. If it is exactly one, it would be a state of unit elasticity, and a change in price would be exactly offset with no change in total revenue. The supplier can use the same formula for determining the elasticity of supply.

$$E_s = \frac{\text{\% change in quantity supplied}}{\text{\% change in price}}$$

As we would use it, it would be

$$E_s = \frac{(Q_2 - Q_1) \div Q_1}{(P_2 - P_1) \div P_1}$$

E_s = supply price elasticity
Q_1 = original supply
Q_2 = new supply
P_1 = original price
P_2 = new price

The Jay County elevator buys corn from local farmers and resells it as livestock feed. During January this elevator paid $2.10 per bushel. At this price farmers have been willing to supply 7,200 bushels per day, but this is not enough to meet the demand. Therefore, the elevator decides to raise the price to $2.20 per bushel. Farmers are now willing to supply 8,500 bushels per day. What is the elasticity of supply?

$$E_s = \frac{(Q_2 - Q_1) \div Q_1}{(P_2 - P_1) \div P_1} = \frac{(8{,}500 - 7{,}200) \div 7{,}200}{(2.20 - 2.10) \div 2.10} = \frac{1{,}300 \div 7{,}200}{.10 \div 2.10}$$

$$= \frac{1{,}300}{7{,}200} \times \frac{2.10}{.10} = 3.79$$

Because 3.79 is greater than one, the supply of corn from storage is elastic. A small change in price will result in a larger change in quantity supplied.

Importance of Demand and Supply Price Elasticity

Demand price elasticity will allow estimation of how much the price will change when the quantity supplied goes up or down. The supply price elasticity will help in estimating how much production will change as price goes up or down. These two tools show how demand and supply are interacting and trying to reach a new equilibrium point. By using these tools, it can more closely be determined whether a business decision is profitable.

Summary

Supply and demand are the two key concepts in determining how much is produced, what the price is, and how much is stored. Understanding the principles of supply and demand is essential to understanding how the marketplace works. Some items have different reactions to supply and demand. These reactions are measured by the elasticity of the item. Luxury goods and necessity goods have different types of elasticity. There are several demand and supply shifters.

Credits

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Lesson 6: Time Value of Money

To make sound management decisions it is essential to understand the present and future value of money. Is a dollar today worth as much as a dollar a year ago or a year from now? Why or why not? Are there hidden costs involved?

Time Value of Money

The value of money is affected by time. A dollar today is worth more than a dollar to be received a year from now. Understanding the concepts of present and future values enables the manager to understand how money is affected by time. No matter how money is invested, there is an opportunity cost involved. One of the biggest opportunity costs affecting the value of money is interest. Interest is the cost of borrowing money or the income earned by investing money.

Future value is what an investment will be worth on some date in the future. It can also be thought of as the additional money paid for an item when one has to borrow money. For example, if $2,000 was invested in a bank at eight percent interest, the returns for one year would be $160. The original $2,000 had a future value of $2,160 at the end of one year.

Present value is what something is worth today. For example, a $50 dollar savings bond that matures 12 years in the future may be purchased for $25.00 today. A lower price is paid because the bond will be earning interest, which is added to its initial cost to raise its value to $50 at maturity.

Inflation also affects the time value of money. Because of this, the manager must understand present and future values to estimate the profitability of investing or borrowing. If these tools are not used, managers may seriously miscalculate their future profit potential.

Compounding vs. Discounting

Compounding is the process of calculating the future value of money. Interest earned during one period is added to principal and used to calculate the interest earned for the period. Using the example of a savings account, the amount deposited is the principal. The bank adds interest to the principal. This increases the total amount of money that is present in the account. During the next period, the bank pays interest on the original deposit plus the interest that has been added.

Discounting is the process of calculating the present value of something that will be received in the future. It is the opposite of compounding. For saving bonds, for example, the purchase price is discounted to a level that is less than the face value at maturity. The value of bonds increases to their face value at the time of maturity.

Loans can be calculated both ways. If money is borrowed on a compounded loan, any unpaid interest becomes part of the principal, and interest must be paid on it. On a discounted loan the full amount of the loan is not received because the interest is deducted from the amount loaned.

Rates for Compounding and Discounting

Compounding and discounting rates are usually the interest rates charged or paid by lending institutions. The interest rate is equal to the discount rate, which is equal to the compounding rate. In comparing investments, the manager should use rates that are actually available for alternatives. Lenders may often try to determine the inflation rate, then add some for the risk involved with an additional three percent or so added for a safety margin.

Compounding and discounting rates can be used to examine the opportunity costs of various business alternatives. The manager must answer some key questions before deciding if the compounding or discounting rates being used are acceptable.

1. What are the opportunity costs?
2. How much risk is associated with the decision?
3. Can the business stand a loss if one is incurred?

Calculating Future Value

Money has a time value. A dollar today is worth more than a dollar to be received some time in the future. A dollar today can be invested to make money. A future dollar cannot be invested until later.

A compounding table has been set up to calculate the future value of money. If $100 is placed in the bank at seven percent interest for five years, how much money would have accumulated? Look at Table 6.1 at the end of this lesson. Find the year column and go down to year five. Trace across to the right in a straight line to the seven percent column. The number is 1.4025. What does that number mean? If the original $100 is multiplied by the 1.4025, the amount of money the account would have in five years would be $100 x 1.4025 or $140.25. The future value of $100 compounded at seven percent for five years is $140.25.

A formula was first used to find the number. These numbers were then listed in tables. Using tables instead of formulas provides a more simple method of calculating the compound value. The formula is as follows for the investment of one dollar:

Future Value of 1 Dollar = $(1 + i)^n$
i = interest rate as a decimal
n = number of time periods

Using the same formula, the future value of a $100 investment at seven percent interest for five years would be computed as follows:

$$FV = \$100 \times (1 + .07)^5$$
$$= \$100 \times (1.4025)$$
$$= \$140.25$$

Rule of 72

There are several useful tools in economics. Such tools can be quite useful in planning investment needs. The Rule of 72 is used to determine how long it takes for money to double at any given interest rate.

The Rule of 72 states that if 72 is divided by the compounding rate, the resulting number will be the number of years that it takes for the sum of money to double. For example, if $10,000 is invested at six percent, it would take 12 years to double to $20,000. How long would it take at 10 percent? It would take 7.2 years.

Annuity

An annuity is a constant sum of money to be received or paid on a regular basis for a period of years. For example, if someone wins the state lottery, that person will not receive all the money at once. Instead, the payments will be received in a stream of equal-sized payments for several years.

Payments that stay the same on a regular schedule can also be thought of as annuities. They are constant streams of payments going out of one business, but they are a constant flow of income to another.

Annuities are often used in business to plan for future needs. When one plans ahead, annuities can budget a constant flow of equal payments into an account to be used for a needed project or later expansion. With a proper understanding of annuities, it is possible to overcome some of the effects of inflation. Other uses for annuities include planning for retirements, pensions, Individual Retirement Accounts, and life insurance policies.

Future Value vs. Future Value of an Annuity

What is the difference between future value and future value of an annuity?

Future value is what something will be worth at some point in the future. The future value of an annuity is the value at some point in the future of a stream of payments to be received each year for several years.

To see the difference, work through an example. Find the future value of $5 in five years with a 10 percent interest rate. Use Table 6.1. The future value of $5 at the end of five years at 10 percent is found on the future value table. It is $5 x 1.6105 or $8.05.

Find the future value of a $5 annuity at 10 percent for five years. On the future value of an annuity table (Table 6.2), by going down five years and across to 10 percent, the factor is shown to be 6.105. That means that at the end of five years, the five five-dollar payments plus interest will amount to $5 x 6.105 or $30.53.

There is a significant difference between future value and the future value of an annuity. This is because the future value of annuity is based on a stream of payments rather than only one payment.

Calculating Present Values

Present value is basically just the opposite of future value. Future values allow one to find the value of something in the future. With present values the value of something in the future is known, and what it is worth today must be determined.

An example would be investing in a savings bond. If the bond would be worth $50 when it matures at the end of five years at five percent, what would it be worth today?

Present values can be determined by using the present value or discounting tables. See Table 6.3 at the end of this lesson. Go down the year column to year five and across the interest column to five percent. The discount factor is .7835. If the $50 future value is multiplied by .7835, the present value is found, which is $39.17 (50 x .7835 = $39.17).

The highest desirable amount of payment for the bond would be $39.17. If it costs more than that, money would be lost on the investment.

The same number could be found by using the formula for present value of one dollar.

$$\text{Present value (PV)} = \frac{1}{(1 + i)^n}$$

i = interest rate as a decimal
n = time periods

$$PV = \frac{1}{(1 + .05)^5} = \frac{1}{1.27628} = .7835$$

The present value of a $50 investment at five percent interest for five years could be computed as follows:

$$PV = 50 \frac{1}{(1 + .05)^5} = 50 \times .7835 = 39.17$$

Compounding Multiplied by Discounting

What happens when a number is multiplied on the compounding table by a corresponding number on the discounting table? Find both tables. Find the discount and compound factors for ten years and eight percent. On the

compound table it is 2.1589, and on the discount table it is .4631. Now multiply these numbers together.

$$2.159 \times .463 = 1$$

The number is one because if the future value is the opposite of the present value, the numbers would counteract each other. The numbers are reciprocals of each other. Remember from a study of fractions that a fraction times its reciprocal is always one.

$$\frac{2}{3} \times \frac{3}{2} = 1$$

Future value is the reciprocal of present value.

Present Value vs. Present Value of an Annuity

What is the difference between present value and present value of an annuity?

Present value is what something to be received in the future is worth today. The present value of an annuity is the value of a stream of payments to be received each year for several years.

To see the difference, work through an example. Find the present value of $5 to be received each year for five years with a 10 percent interest rate. The present value of $5 to be received at the end of five years at 10 percent is found on the present value table. See Table 6.3. It is $5 x .6209 or $3.10.

Find the present value of a $5 annuity at 10 percent for five years. On the annuity table, Table 6.4, by going down five years and across to 10 percent, the factor is shown to be 3.7908. That means that if one had the cash value in hand today, instead of getting five equal payments for five years, the value would be $5 x 3.7908 or $18.95.

There is a significant difference between present value and the present value of an annuity. This is because the present value of annuity is based on a stream of payments rather than only one payment.

Amortization Tables

An amortization table is a table that calculates constant payments needed to repay both the principal and interest on a sum of money. The term "amortize" refers to a loan that is set up on equal installment payments. These payments can be set up on annual, semi-annual, quarterly, or monthly payments. These tables are set up most conveniently for yearly payments, but they can be used for the other payment schedules as well.

With equal payments there is a larger amount of interest cost and smaller amount being applied to the principal during the early stages of the loan. As the number of payments increase, the amount of interest decreases, and the

amount going to principal increases. Interest is only being paid on the actual amount still owed. Because the total size of the payments are always the same, managers can plan the payments into their cash flow.

The amortization table, Table 6.5, is used by going to the far left column. It will either be marked in years or time periods. Drop down to year five. Now cross over to 10 percent interest. The factor is .2637. So if $10,000 is borrowed at 10 percent for five years, the annual payments would be $10,000 x .2637 or $2,637. The payment schedule is illustrated in Table 6.6.

TABLE 6.6

	Interest		Payment on Principal		Total payment
Year 1	$1,000		$1,637		$2,637
2	836		1,801		2,637
3	656		1,981		2,637
4	458		2,179		2,637
5	218		2,419		2,637
	$3,168	+	$10,017*	=	$13,185

* Principal did not quite total $10,000 due to rounding.

If semi-annual payments are made, the same table can be used. If the loan is for five years with semi-annual payments, the time period, or number of payment periods, is ten. The interest must be divided by two because half the interest twice a year is the same as all the interest once a year.

Find the factor for 10 time periods (years) at 5 percent interest. That factor is .1295. The semi-annual payment will be $1,295, or $1,000 x .1295. The total cost of the loan would be $12,950. It is less than the other loan because the money is being paid back more frequently. This lowers the interest cost.

With a complete table, this could be divided into monthly payments for something like a car loan or land payments. All that is necessary is to use the number of months as time periods and divide the interest rate by the number of months.

Feasibility

Throughout life, individuals will make many decisions. These decisions will have significant impacts on their future. A financial decision today could be very profitable over time, but if it doesn't return enough at first, it may not be feasible.

If an investment is feasible, it will generate enough after-tax income to pay for itself. The investment must have a positive cash flow during its economic

life, or loan period. Many agricultural investments show a negative cash flow during the first year or two of activity. The difference must be made up from profits in other parts of the operation, in savings, or by short-term borrowing. Because this can be an excessive burden to the operation, it has become an important managerial concern.

There are certain steps that can help overcome this cash flow problem. Prepare a cash flow for the investment item. Then, if the cash flow is negative in the first year or two, determine whether the operation can absorb any added costs of the new investment. Try to match the economic life, or length of loan, to the physical life, or how long the item will last. Also, the more money that can be invested at first, the easier it will be for the cash flow to be positive because the payment will be smaller.

To visualize all of this, think of a large machinery purchase. Many times, the loan payment will be more at first than the money earned with the machine. Think of situations with which you are familiar. Follow the previous steps to determine the feasibility of various investments.

Profitability Index

The most practical way to determine if something is profitable is to determine if the benefits outweigh the costs. For a profitability index (PI), the benefits must be determined and divided by the costs. This provides a useful management tool for making investment decisions.

The profitability index allows for comparison of investment with different rates of return and with different lengths of time. The most profitable investment can then be selected. The present value of each of the investments will be used through the life of that investment. This puts the value of the investment in terms of today's dollar, which can easily be compared. If a person was currently earning $110 from a $100 investment, the profitability index would be figured as follows:

$$\frac{\$110 \text{ benefit}}{\$100 \text{ cost}} = 1.10 \text{ profitability index}$$

As long as the profitability index is greater than one, the investment is profitable. When deciding between two investments, simply choose the one with the highest profitability index.

Summary

Money is a tool - nothing more and nothing less. If the tool is used right, it will benefit the operation. If the tool is used with poor judgment, it might not be there to use tomorrow. Money has a time value because of inflation and opportunity costs (interest and alternative uses). Risks are involved in most investments and must be considered during investment planning.

Investment alternatives should always be subjected to measures of feasibility and profitability. A good way of measuring feasibility is by using a cash flow of returns vs. a cost or payment schedule for the investment. A profitability index is a good measure for comparing the profitability of various investments.

Credits

Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

McConnell, Campbell R. Economics. St. Louis: McGraw-Hill Book Company, 1981.

Osburn, Donald D.; Kenneth C. Schneeberger. Modern Agriculture Management. Reston, VA: Reston Publishing Co., Inc., 1983.

Future Value at Compound Interest

$FV = (1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544
3	1.1248	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049
4	1.1698	1.2155	1.2624	1.3107	1.3604	1.4115	1.4641	1.5180	1.5735
5	1.2166	1.2762	1.3382	1.4025	1.4693	1.5386	1.6105	1.6850	1.7623
6	1.2653	1.3400	1.4185	1.5007	1.5868	1.6771	1.7715	1.8704	1.9738
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0761	2.2106
8	1.3685	1.4774	1.5938	1.7181	1.8509	1.9925	2.1435	2.3045	2.4759
9	1.4233	1.5513	1.6894	1.8384	1.9990	2.1718	2.3579	2.5580	2.7730
10	1.4802	1.6288	1.7908	1.9671	2.1589	2.3673	2.5937	2.8394	3.1058
11	1.5394	1.7103	1.8982	2.1048	2.3316	2.5804	2.8531	3.1517	3.4785
12	1.6010	1.7958	2.0121	2.2521	2.5181	2.8126	3.1384	3.4984	3.8959
13	1.6650	1.8856	2.1329	2.4098	2.7196	3.0658	3.4522	3.8832	4.3634
14	1.7316	1.9799	2.2609	2.5785	2.9371	3.3417	3.7974	4.3104	4.8871
15	1.8009	2.0789	2.3965	2.7590	3.1721	3.6424	4.1772	4.7845	5.4735
16	1.8729	2.1828	2.5403	2.9521	3.4259	3.9703	4.5949	5.3108	6.1303
17	1.9479	2.2920	2.6927	3.1588	3.7000	4.3276	5.0544	5.8950	6.8660
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5435	7.6899
19	2.1068	2.5269	3.0255	3.6165	4.3157	5.1416	6.1159	7.2633	8.6127
20	2.1911	2.6532	3.2071	3.8696	4.6609	5.6044	6.7274	8.0623	9.6462
25	2.6658	3.3863	4.2918	5.4274	6.8484	8.6230	10.8347	13.5854	17.0000
30	3.2433	4.3219	5.7434	7.6122	10.0626	13.2676	17.4494	22.8922	29.9599
35	3.9460	5.5160	7.6860	10.6765	14.7853	20.4139	28.1024	38.5748	52.7996
40	4.8010	7.0399	10.2857	14.9744	21.7245	31.4094	45.2592	65.0008	93.0509

Year	13%	14%	15%	16%	17%	18%	19%	20%
1	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
2	1.2769	1.2996	1.3225	1.3456	1.3689	1.3924	1.4161	1.4400
3	1.4428	1.4815	1.5208	1.5608	1.6016	1.6430	1.6851	1.7280
4	1.6304	1.6889	1.7490	1.8106	1.8738	1.9387	2.0053	2.0736
5	1.8424	1.9254	2.0113	2.1003	2.1924	2.2877	2.3863	2.4883
6	2.0819	2.1949	2.3130	2.4363	2.5651	2.6995	2.8397	2.9859
7	2.3526	2.5022	2.6600	2.8262	3.0012	3.1854	3.3793	3.5831
8	2.6584	2.8525	3.0590	3.2784	3.5114	3.7588	4.0213	4.2998
9	3.0040	3.2519	3.5178	3.8029	4.1084	4.4354	4.7854	5.1597
10	3.3945	3.7072	4.0455	4.4114	4.8068	5.2338	5.6946	6.1917
11	3.8358	4.2262	4.6523	5.1172	5.6239	6.1759	6.7766	7.4300
12	4.3345	4.8179	5.3502	5.9360	6.5800	7.2875	8.0642	8.9161
13	4.8980	5.4924	6.1527	6.8857	7.6986	8.5993	9.5964	10.6993
14	5.5347	6.2613	7.0757	7.9875	9.0074	10.1472	11.4197	12.8391
15	6.2542	7.1379	8.1370	9.2655	10.5387	11.9737	13.5895	15.4070
16	7.0673	8.1372	9.3576	10.7480	12.3303	14.1290	16.1715	18.4884
17	7.9860	9.2764	10.7612	12.4676	14.4264	16.6722	19.2441	22.1861
18	9.0242	10.5751	12.3754	14.4625	16.8789	19.6732	22.9005	26.6233
19	10.1974	12.0556	14.2317	16.7765	19.7483	23.2144	27.2516	31.9479
20	11.5230	13.7434	16.3665	19.4607	23.1055	27.3930	32.4294	38.3375
25	21.2305	26.4619	32.9189	40.8742	50.6578	62.6686	77.3880	95.3962
30	39.1158	50.9501	66.2117	85.8498	111.0646	143.3706	184.6752	237.3762
35	72.0685	98.1001	133.1755	180.3140	243.5034	327.9972	440.7005	590.6681
40	132.7815	188.8834	267.8635	378.7211	533.8686	750.3782	1051.6674	1469.7713

Future Value of a Uniform Series of Annuity of $1

$$V_N = \$1\left[\frac{(1+i)^N - 1}{i}\right] = USFV_{i,N}$$

n	.5%	1%	1.5%	2%	2.5%	3%	3.5%	4%	5%	6%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.005	2.010	2.015	2.020	2.025	2.030	2.035	2.040	2.050	2.060
3	3.015	3.030	3.045	3.060	3.076	3.091	3.106	3.122	3.152	3.184
4	4.030	4.060	4.091	4.122	4.153	4.184	4.214	4.246	4.310	4.375
5	5.050	5.101	5.152	5.204	5.256	5.309	5.362	5.416	5.526.	5.637
6	6.076	6.152	6.230	6.308	6.388	6.468	6.550	6.633	6.802	6.975
7	7.106	7.214	7.323	7.434	7.547	7.662	7.779	7.898	8.142	8.394
8	8.141	8.286	8.432	8.583	8.736	8.892	9.052	9.214	9.549	9.897
9	9.182	9.369	9.559	9.755	9.955	10.159	10.368	10.583	11.027	11.491
10	10.228	10.462	10.703	10.950	11.203	11.464	11.731	12.006	12.578	13.181
11	11.279	11.567	11.863	12.169	12.483	12.808	13.142	13.486	14.207	14.972
12	12.336	12.683	13.041	13.412	13.796	14.192	14.602	15.026	15.917	16.870
13	13.397	13.809	14.237	14.680	15.140	15.618	16.113	16.627	17.713	18.882
14	14.464	14.947	15.450	15.974	16.519	17.086	17.677	18.292	19.599	21.051
15	15.537	16.097	16.682	17.293	17.932	18.599	19.296	20.024	21.579	23.276
16	16.614	17.258	17.932	18.639	19.380	20.157	20.971	21.825	23.657	25.673
17	17.697	18.430	19.201	20.012	20.865	21.762	22.705	23.698	25.840	28.213
18	18.786	19.615	20.489	21.412	22.386	23.414	24.500	25.645	28.132	30.906
19	19.880	20.811	21.797	22.841	23.946	25.117	26.357	27.671	30.539	33.760
20	20.979	22.019	23.124	24.297	25.545	26.870	28.280	29.778	33.066	36.786
25	26.559	28.243	30.063	32.030	34.158	36.459	38.950	41.646	47.727	54.865
30	32.280	34.785	37.539	40.568	43.903	47.575	51.663	56.085	66.439	79.058
40	44.159	48.886	54.268	60.402	67.403	75.401	84.550	95.026	120.800	154.762
50	56.645	64.463	73.683	84.579	97.484	112.797	130.998	152.667	209.348	290.336

n	7%	8%	9%	10%	12%	14%	16%	20%	25%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.070	2.080	2.090	2.100	2.120	2.140	2.160	2.200	2.250
3	3.215	3.246	3.278	3.310	3.374	3.440	3.506	3.640	3.813
4	4.440	4.506	4.573	4.641	4.779	4.921	5.066	5.368	5.766
5	5.751	5.867	5.985	6.105	6.353	6.610	6.877	7.442	8.207
6	7.153	7.336	7.523	7.716	8.115	8.536	8.977	9.930	11.259
7	8.654	8.923	9.200	9.487	10.089	10.730	11.414	12.916	15.073
8	10.260	10.637	11.028	11.436	12.300	11.233	14.240	16.499	19.842
9	11.978	12.488	13.021	13.579	14.776	16.085	17.518	20.799	25.802
10	13.816	14.487	15.193	15.937	17.549	19.337	21.321	25.959	33.253
11	15.784	16.645	17.560	18.531	20.655	23.045	25.733	32.150	42.566
12	17.888	18.977	20.141	21.384	24.133	27.271	30.850	39.581	54.208
13	20.141	21.495	22.953	24.523	28.029	32.089	36.786	48.497	68.760
14	22.550	24.215	26.019	27.975	32.393	37.581	43.672	59.196	86.949
15	25.129	27.152	29.361	31.772	37.280	43.842	51.660	72.035	109.687
16	27.888	30.324	33.003	35.950	42.753	50.980	60.925	87.442	138.109
17	30.840	33.750	36.974	40.545	48.884	59.118	71.673	105.931	173.636
18	33.999	37.450	41.301	45.599	55.750	68.394	84.141	128.117	218.045
19	37.379	41.446	46.018	51.159	63.440	78.969	98.603	154.740	273.556
20	40.995	45.762	51.160	57.275	72.052	91.025	115.380	186.688	342.945
25	63.249	73.106	84.701	98.347	133.334	181.871	249.214	471.981	1054.791
30	94.461	113.283	136.308	164.494	241.333	356.787	530.312	1181.882	3227.174
40	199.635	259.057	337.882	442.593	761.091	1342.025	2360.757	7343.858	30088.655
50	406.529	573.770	815.084	1163.909	2400.018	4994.521	10435.649	45497.191	280255.693

Present Value of 1

$PV = 1/(1 + i)^n$

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	0.9615	0.9523	0.9433	0.9345	0.9259	0.9174	0.9090	0.9009
2	0.9245	0.9070	0.8899	0.8734	0.8573	0.8416	0.8264	0.8116
3	0.8889	0.8638	0.8396	0.8163	0.7938	0.7721	0.7513	0.7311
4	0.8548	0.8227	0.7920	0.7629	0.7350	0.7084	0.6830	0.6587
5	0.8219	0.7835	0.7472	0.7130	0.6805	0.6499	0.6209	0.5934
6	0.7903	0.7462	0.7049	0.6663	0.6301	0.5962	0.5644	0.5346
7	0.7599	0.7106	0.6650	0.6227	0.5834	0.5470	0.5131	0.4817
8	0.7306	0.6768	0.6274	0.5820	0.5402	0.5018	0.4665	0.4339
9	0.7025	0.6446	0.5918	0.5439	0.5002	0.4604	0.4240	0.3909
10	0.6755	0.6139	0.5583	0.5083	0.4631	0.4224	0.3855	0.3521
11	0.6495	0.5846	0.5267	0.4751	0.4288	0.3875	0.3509	0.3172
12	0.6245	0.5568	0.4969	0.4440	0.3971	0.3555	0.3186	0.2858
13	0.6005	0.5303	0.4688	0.4150	0.3676	0.3262	0.2896	0.2575
14	0.5774	0.5050	0.4423	0.3878	0.3404	0.2992	0.2633	0.2319
15	0.5552	0.4810	0.4172	0.3624	0.3152	0.2745	0.2393	0.2090
16	0.5339	0.4581	0.3936	0.3387	0.2918	0.2518	0.2176	0.1882
17	0.5133	0.4362	0.3713	0.3166	0.2702	0.2310	0.1978	0.1696
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2119	0.1798	0.1528
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1944	0.1635	0.1376
20	0.4563	0.3768	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240
25	0.3751	0.2953	0.2329	0.1842	0.1460	0.1159	0.0922	0.0736
30	0.3083	0.2313	0.1741	0.1314	0.0993	0.0753	0.0573	0.0436
35	0.2534	0.1812	0.1301	0.0936	0.0676	0.0489	0.0355	0.0259
40	0.2082	0.1420	0.0972	0.0668	0.0460	0.0318	0.0220	0.0153

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.8928	0.8849	0.8771	0.8695	0.8620	0.8547	0.8474	0.8403	0.8333
2	0.7971	0.7831	0.7694	0.7561	0.7431	0.7305	0.7181	0.7061	0.6944
3	0.7117	0.6930	0.6749	0.6575	0.6406	0.6243	0.6086	0.5934	0.5787
4	0.6355	0.6133	0.5920	0.5717	0.5522	0.5336	0.5157	0.4986	0.4822
5	0.5674	0.5427	0.5193	0.4971	0.4761	0.4561	0.4371	0.4190	0.4018
6	0.5066	0.4803	0.4555	0.4323	0.4104	0.3898	0.3704	0.3521	0.3348
7	0.4523	0.4250	0.3996	0.3759	0.3538	0.3331	0.3139	0.2959	0.2790
8	0.4038	0.3761	0.3505	0.3269	0.3050	0.2847	0.2660	0.2486	0.2325
9	0.3606	0.3328	0.3075	0.2842	0.2629	0.2434	0.2254	0.2089	0.1938
10	0.3219	0.2945	0.2697	0.2471	0.2266	0.2080	0.1910	0.1756	0.1615
11	0.2874	0.2606	0.2366	0.2149	0.1954	0.1778	0.1619	0.1475	0.1345
12	0.2566	0.2307	0.2075	0.1869	0.1684	0.1519	0.1372	0.1240	0.1121
13	0.2291	0.2042	0.1820	0.1625	0.1452	0.1298	0.1162	0.1042	0.0934
14	0.2046	0.1806	0.1597	0.1413	0.1251	0.1110	0.0985	0.0875	0.0778
15	0.1826	0.1598	0.1400	0.1228	0.1079	0.0948	0.0835	0.0735	0.0649
16	0.1631	0.1414	0.1228	0.1068	0.0930	0.0811	0.0707	0.0618	0.0540
17	0.1456	0.1252	0.1077	0.0929	0.0802	0.0693	0.0599	0.0519	0.0450
18	0.1300	0.1108	0.0946	0.0808	0.0691	0.0592	0.0508	0.0436	0.0375
19	0.1161	0.0980	0.0829	0.0702	0.0596	0.0506	0.0430	0.0366	0.0313
20	0.1036	0.0867	0.0728	0.0611	0.0513	0.0432	0.0365	0.0308	0.0260
25	0.0588	0.0471	0.0378	0.0303	0.0244	0.0197	0.0159	0.0129	0.0104
30	0.0333	0.0255	0.0196	0.0151	0.0116	0.0090	0.0069	0.0054	0.0042
35	0.0189	0.0138	0.0101	0.0075	0.0055	0.0041	0.0030	0.0022	0.0016
40	0.0107	0.0075	0.0052	0.0037	0.0026	0.0018	0.0013	0.0009	0.0006

Present Value of Annuity of $1

Year	4%	5%	6%	7%	8%	9%	10%	11%
1	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.9009
2	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125
3	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868	2.4437
4	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024
5	4.4518	4.3295	4.2124	4.1002	3.9927	3.8896	3.7908	3.6959
6	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305
7	6.0020	5.7864	5.5824	5.3893	5.2064	5.0329	4.8684	4.7122
8	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461
9	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370
10	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892
11	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065
12	9.3851	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924
13	9.9856	9.3936	8.8527	8.3576	7.9038	7.4869	7.1034	6.7499
14	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819
15	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909
16	11.6523	10.8378	10.1059	9.4467	8.8514	8.3126	7.8237	7.3792
17	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.5488
18	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.7016
19	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.8393
20	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5135	7.9633
25	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	8.4217
30	17.2920	15.3724	13.7648	12.4090	11.2578	10.2736	9.4269	8.6938
35	18.6646	16.3742	14.4982	12.9477	11.6546	10.5668	9.6442	8.8552
40	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7790	8.9511

Table 4. cont'd

Year	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	.8929	.8850	.8772	.8696	.8621	.8547	.8475	.8403	.8333
2	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.4018	2.3611	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.0373	2.9745	2.9137	2.8549	2.7982	2.7432	2.6901	2.6386	2.5887
5	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	4.1114	3.9975	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	4.5638	4.4226	4.2883	4.1604	4.0386	3.9224	3.8115	3.7057	3.6046
8	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	5.9377	5.6869	5.4527	5.2337	5.0286	4.8364	4.6560	4.4865	4.3271
12	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	6.4235	6.1218	5.8424	5.5831	5.3423	5.1183	4.9095	4.7147	4.5327
14	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	6.8109	6.4624	6.1422	5.8474	5.5754	5.3242	5.0916	4.8759	4.6755
16	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	7.2497	6.8399	6.5504	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	7.3658	6.9380	6.6231	6.1982	5.8774	5.5845	5.3162	5.0700	4.8435
20	7.4694	7.0248	6.6869	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
25	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476
30	8.0552	7.4956	7.0027	6.5660	6.1772	5.8294	5.5168	5.2346	4.9789
35	8.1755	7.5856	7.0700	6.6166	6.2153	5.8582	5.5386	5.2512	4.9915
40	8.2438	7.6344	7.1050	6.6418	6.2335	5.8713	5.5481	5.2581	4.9966

and Maturities (Amortization Table)

YEAR	4%	5%	6%	7%	8%	9%	10%	11%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100
2	.5301	.5378	.5454	.5530	.5607	.5684	.5761	.5839
3	.3603	.3672	.3741	.3810	.3880	.3950	.4021	.4092
4	.2754	.2820	.2885	.2952	.3019	.3086	.3154	.3223
5	.2246	.2309	.2373	.2438	.2504	.2570	.2637	.2705
6	.1907	.1970	.2033	.2097	.2163	.2229	.2296	.2363
7	.1666	.1728	.1791	.1855	.1920	.1986	.2054	.2122
8	.1485	.1547	.1610	.1674	.1740	.1806	.1874	.1943
9	.1344	.1406	.1470	.1534	.1600	.1667	.1736	.1806
10	.1232	.1295	.1358	.1423	.1490	.1558	.1627	.1698
11	.1141	.1203	.1267	.1333	.1400	.1469	.1539	.1611
12	.1065	.1128	.1192	.1259	.1326	.1396	.1467	.1540
13	.1001	.1064	.1129	.1196	.1265	.1335	.1407	.1481
14	.0946	.1010	.1075	.1143	.1212	.1284	.1357	.1432
15	.0899	.0963	.1029	.1097	.1168	.1240	.1314	.1390
16	.0858	.0922	.0989	.1058	.1129	.1203	.1278	.1355
17	.0821	.0886	.0954	.1024	.1096	.1170	.1246	.1324
18	.0789	.0855	.0923	.0994	.1067	.1142	.1219	.1298
19	.0761	.0827	.0896	.0967	.1041	.1117	.1195	.1275
20	.0735	.0802	.0871	.0943	.1018	.1095	.1174	.1255
25	.0640	.0709	.0782	.0858	.0936	.1018	.1101	.1187
30	.0578	.0650	.0726	.0805	.0888	.0973	.1060	.1150
35	.0535	.0610	.0689	.0772	.0858	.0946	.1036	.1129
40	.0505	.0505	.0664	.0750	.0838	.0929	.1022	.1117

12%	13%	14%	15%	16%	17%	18%	19%	20%
1.1200	1.1300	1.1400	1.1500	1.1600	1.1700	1.1800	1.1900	1.2000
.5916	.5994	.6072	.6151	.6229	.6308	.6387	.6466	.6545
.4163	.4235	.4307	.4379	.4452	.4525	.4599	.4673	.4747
.3292	.3361	.3432	.3502	.3573	.3645	.3717	.3789	.3862
.2774	.2843	.2912	.2983	.3054	.3125	.3197	.3270	.3343
.2432	.2501	.2571	.2642	.2713	.2786	.2859	.2932	.3007
.2191	.2261	.2331	.2403	.2476	.2549	.2623	.2698	.2774
.2013	.2083	.2155	.2228	.2302	.2376	.2452	.2528	.2606
.1876	.1948	.2021	.2095	.2170	.2246	.2323	.2401	.2480
.1769	.1842	.1917	.1992	.2069	.2146	.2225	.2304	.2385
.1684	.1758	.1833	.1910	.1988	.2067	.2147	.2228	.2311
.1614	.1689	.1766	.1844	.1924	.2004	.2086	.2168	.2252
.1556	.1633	.1711	.1791	.1871	.1953	.2036	.2121	.2206
.1508	.1586	.1666	.1746	.1828	.1912	.1996	.2082	.2168
.1468	.1547	.1628	.1710	.1793	.1878	.1964	.2050	.2138
.1433	.1514	.1596	.1679	.1764	.1850	.1937	.2025	.2114
.1404	.1486	.1569	.1653	.1739	.1826	.1914	.2004	.2094
.1379	.1462	.1546	.1631	.1718	.1807	.1896	.1986	.2078
.1357	.1441	.1526	.1613	.1701	.1790	.1881	.1972	.2064
.1338	.1423	.1509	.1597	.1686	.1776	.1862	.1960	.2053
.1275	.1364	.1454	.1546	.1640	.1734	.1829	.1924	.2021
.1241	.1334	.1428	.1523	.1618	.1715	.1812	.1910	.2008
.1223	.1318	.1414	.1511	.1608	.1707	.1805	.1904	.2003
.1213	.1309	.1407	.1505	.1604	.1703	.1802	.1901	.2001

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT II - BUSINESS MANAGEMENT

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UNIT II - BUSINESS MANAGEMENT

Lesson 1: Ways of Organizing a Business

There are several different ways to organize a business. A small, local business may only have one owner, but a giant corporation such as General Motors may have several thousand stockholders who each own a share of the company. How does such a difference in ownership affect management decisions and the role of the business in the local community?

Role of Agricultural Business

Agricultural businesses perform two important roles within the local community.

Sales - Agricultural businesses provide many products needed by the community. These products are supplied through dealerships, machinery parts stores, farmers markets, grocery stores, sales representatives, farm supplies stores, or factory outlets.

Services - Agricultural businesses provide many useful services to the community. These services may include welding and repair shops; turf and landscape management; veterinary medicine; fuel delivery; financial management; and educational programs.

The community also receives many additional benefits other than sales and business. Agricultural businesses help create jobs and income. Much of this income is spent within the local community. This helps provide jobs for other individuals. Agricultural businesses also provide tax revenue that helps fund the local community. Many agricultural businesses offer scholarships. Agricultural business leaders also provide an important source of community leadership.

Organizational Structures

There are six different types of organizational structures used in business. The type of organizational structure used will determine many important business concerns such as control, liability, and taxation. The types of organizational structures are listed below.

1. Individual or sole proprietorship
2. Partnership
    a. General
    b. Limited
3. Corporation
    a. Subchapter C - regular corporation
    b. Subchapter S
    c. Subchapter T - cooperative

Characteristics of Each Organizational Structure

Individual or sole proprietorship - In this type of organizational structure, an individual owns the business and has complete control of policy decisions. Because there is only one owner, no voting is necessary. The individual receives any profit earned from the business, but can also be held liable for everything he or she owns, including home, savings, and non-business investments. The individual is responsible for filing and paying income taxes. Most family farms use this type of organizational structure.

General partnership - A general partnership is an association of two or more people who, as owners, manage a business together. General partnerships contain certain recognizable factors. There should be an agreement explaining the terms of the partnership and outlining who is to contribute what, how decisions are to be made, and how profits are to be split. A general partnership is dissolved by death, agreement, or bankruptcy.

Generally, voting and profit sharing are based on the amount each partner contributes to the partnership. Each partner is fully liable for the partnership's activities. The partnership must file tax returns, but it pays no taxes. The partnership's tax return provides information so that each partner can file individual returns. Any profit earned by the partnership is divided between the partners based on previous agreements.

Limited partnership - A limited partnership is an association between the main owner of the business and investors outside the business, who are called limited partners. Limited partnerships share many of the characteristics of general partnerships, but there are some important differences.

Limited partners have no voice in management decisions. The limited partner's name cannot even appear in the partnership name. Limited partnerships are for investment purposes only. Under the Tax Reform Act of 1986, limited partners can no longer deduct a partnership loss from other personal income. Limited partners, however, are only liable for the amount they have invested in the partnership.

Regular (Subchapter C) corporation - In this type of business, the original owners sell stocks to investors to raise capital. The investors, who also become owners, buy the stock hoping the company will do well. If the company does well, it will pay dividends on each share of stock. If the company is profitable enough, the value of the stock will increase because more investors want to own the stock.

In regular corporations, voting is done by those owning common shares of stock. Each share of stock is worth one vote. Policy decisions are made by the stockholders and the board of directors. The corporation is financially liable.

Subchapter S corporation - Subchapter S corporations differ from regular corporations in the way they are taxed. The corporation must file tax reports, but it pays no taxes itself. Each individual stockholder pays taxes on that individual's share of the profits. There are some limitations, though.

Subchapter S corporations are limited to 35 stockholders and the stockholders cannot be another corporation. Because of that limitation, this type of corporation is used mainly for family farms and small businesses that decide to incorporate.

Voting and decision making is done by the stockholders in relationship to the amount of stock owned. The corporation is liable. The stockholders receive the profit based on the number of shares of stock.

Cooperative - A cooperative is a special type of corporation. Cooperatives are classified as subchapter T corporations. The members of a cooperative are all the people who make purchases from the cooperative. These members are the owners of the cooperative. Cooperatives are limited to eight percent profit each year. If more profit than eight percent is earned, the amount over eight percent must be returned to the members in the form of a patronage refund, which is based on the amount of business the member does with the cooperative. However, by doing business with the cooperative, the members agree to allow the cooperative to retain some of this patronage refund for growth and improvements. Therefore, the members may receive only a portion of the patronage refund, and the rest is kept by the cooperative.

Cooperatives pay tax on the eight percent profit, and the members are taxed on any patronage refund. Depending on the cooperative, members may have one vote each or may vote in proportion to the amount of business they provide. Policy decisions are made by the members and the directors. The cooperative is financially liable.

Sole Proprietorship

Advantages - The sole proprietorship is the simplest type of organizational structure to form. There are few government regulations or restrictions. Management and control are solely in the owner's hands. Therefore, no voting is necessary. This allows owners to make quick decisions without waiting to talk with others.

Another advantage is that the owner receives all the profits. This may provide an extra incentive for the owner to do a good job in managing and operating the business.

Disadvantages - There are also some disadvantages to the sole proprietorship. All the owner's business and non-business assets are liable. Management of income tax and estate planning is more limited than with the other forms of organizational structure. This is often a major consideration in changing business structures.

Another disadvantage is that the owner is limited to the capital he or she has or can borrow. Other business structures bring together more than one person's capital resources.

General Partnership

Advantages - General partnerships are fairly easy to establish. There are few government regulations or restrictions. Having one or more partners can also add financial resources and management expertise.

Disadvantages - There are some potential problems in a general partnership that may be avoided through planning and understanding. Partners must have a high level of tolerance and understanding. Most disagreements concern trivial matters, and the partners need to be able to deal with them.

In a family partnership, parents and children often have different goals. Effective communication is very important to avoid misunderstanding and disagreements.

A small business may run into problems in a family partnership. The parents may feel like they have to burden themselves with more debt to increase the operating size to bring the son or daughter into the partnership. Partners should avoid living in the same house or next to each other. People need a chance to relax and remove themselves from the tensions involved with work.

Limited Partnership

Advantages - Any limited partner income is free of social security tax. This is especially important for people to consider when planning for retirement, because this income can be earned after retirement without affecting social security earnings. There is very little time and no management responsibilities involved. Limited partners are only liable for the amount they have invested in the partnership.

Disadvantages - Limited partners have no voice in management. This may concern some people who do not like the partnership's current management strategies. All the management responsibilities are put on the non-limited partner.

The Tax Reform Act of 1986 prohibits passive partners from deducting losses from partnership activities from their personal income. Passive partners include all limited partners and the general partners who do not take an active role in management. When in doubt, one should seek advice from a tax consultant.

Corporation

Advantages - Corporations have a different management structure than sole proprietorships or partnerships. There is continuity of management in a corporation. Because stockholders select the manager, the organization can keep going by selecting a new manager if the old manager should leave or become unable to work. Liability is limited for each stockholder to the amount the stockholder has invested.

There are added benefits in estate planning such as giving gifts of corporate stock to children to transfer ownership of the corporation. In time, these gifts can pass the ownership of an estate to the children and avoid huge estate taxes at the death of the owner.

Corporations have income tax advantages; however, these advantages are subject to change according to changes in the law and may require the advice of a lawyer or tax consultant.

Corporations may be able to accumulate more capital than other organizational structures through the sale of stocks and by combining several sources of income.

Disadvantages - Corporations are complicated and costly to organize. More procedures are involved in forming corporations than other types of business organizations. Expenses include filing fees, articles of incorporation, and initial legal and accounting expenses. Corporations are often saddled with a complicated record keeping system.

Income tax laws are unique for corporations. Corporations pay tax on their incomes, and stockholders have to pay tax on dividends they receive. This may result in double taxation. The effect of income tax will change as the tax laws change.

Ending a corporation may be complicated and expensive. For example, land is valued at market value instead of original basis for tax purposes when a corporation is forced to dissolve. Because the corporation pays taxes on the difference between market value and basis, a corporation may end up paying extra taxes if the value of the land increases. The other types of business structures do not face this problem.

Cooperative

Advantages - Members risk only the amount they have invested. Cooperatives are owned and controlled by the members that use them; therefore, the cooperative should be responsive to the needs of the members. Cooperatives are designed to operate on a low level of profit to hold down costs for members. When profits above eight percent are made, a portion of those profits are returned to the members. Because a portion of the profits go to the customer, the income tax paid by the cooperative is limited.

Disadvantages - The customers will usually never receive the full amount of their shares of the profit because some is withheld by the cooperative. However, the customer pays tax on the full amount of profit. Another disadvantage is that current customers will suffer from past business losses because the cooperative will have to raise prices or use patronage refund money to cover those losses. Members may be required to purchase stock in a cooperative. This stock is unlike regular stock because it cannot gain value.

Determining the Best Structure

There is no best structure for an agricultural business. Each structure has certain unique advantages and disadvantages compared to the others. Determining the best structure for a particular business will depend on the owner's situation and the owner's preference. The sole proprietorship, however, is the most common structure for a farm business.

Summary

Agricultural businesses provide both sales and services along with side benefits such as jobs and incomes to the community. There are several ways these businesses can be organized: sole proprietorship, partnership, or corporation. The business structure determines important things such as how decisions are made, who is liable, and how taxes are paid. Each organizational structure has unique advantages and disadvantages. Therefore, it is necessary to consider each business separately when choosing an organizational structure.

Credits

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UNIT II - BUSINESS MANAGEMENT

Lesson 2: Steps in Buying Land

Rich and Sue Blackacre were recently married. They both have good careers in the same city, but neither want to live in the city. They have decided to pool their resources and buy a small farm a few miles outside the city limits. Neither of them has ever owned land, so they have several questions about buying land and protecting their investment.

Factors to Consider When Selecting Land

The first step they decided on was to write out a list of factors to consider. This step helps narrow down the choices of farms.

The following are some of the factors that they determined are important.

1. Size of business or farm - amount of land needed or desired
2. Soil conditions - adequacy for potential enterprises
3. Improvements - condition and usefulness of buildings
4. Possible hazards - soil limitations or erosion potential
5. Neighbors, schools, churches, community
6. Location
    a) Accessibility and road condition
    b) Traffic conditions - important factor in heavily populated areas
    c) Distance from commonly visited places
        1) Schools
        2) Town/city - especially important for people who work in the city
        3) Potential customers for farm products

Determining the Value for a Property

Now that the Blackacres have identified the factors to consider in selecting possible farms, they need a way of determining how much the farm is worth to them.

Capitalization approach - There are several methods of appraising the value of property. One method used frequently is the capitalization approach. In this approach, one estimates the profit that could be earned by renting the land. By using the potential profits from renting, one can obtain a quick, accurate measure of the value of the land. This profit is divided by an interest rate acceptable to or obtainable by the buyer. This interest rate is what the buyer would pay on a loan taken out to purchase the property.

$$\frac{\text{Annual profit of landlord}}{\text{Rate of interest desired}} = \text{Value of property}$$

For example, the place the Blackacres are considering buying is currently being rented for $8,000 a year. The Blackacres can obtain a loan at 10 percent interest. With this interest rate, they would value the farm at $80,000, which is $8,000/.10.

The Blackacres would also look at other factors and adjust the value of the property accordingly. The farm the Blackacres are interested in has a location value of +$5,000, meaning that the Blackacres are willing to pay $5,000 more for this location because of its nearness to places such as town and their parents' homes. For the Blackacres, the size of the farm has a neutral value, neither plus nor minus. The productivity of the farm's soil is usually figured in the profit of the landlord.

Improvements frequently have a negative value if the buyer doesn't need them or if they are not suited to the proposed situation. However, in this example the Blackacres are especially delighted with the new machinery shed on the farm, so they are willing to pay an extra +$6,000 for this improvement. The Blackacres consider hazards, the main one being a chemical plant that is upstream from the farm; because of these hazards, the farm is worth $10,000 less to the Blackacres. The farm's value to the Blackacres would be $80,000 + $5,000 + $6,000 - $10,000 or $81,000.

Young buyers should seek advice from their vocational agriculture instructors, extension farm management specialists, parents, neighbors, and others to be sure realistic estimates are being used in determining the value of property.

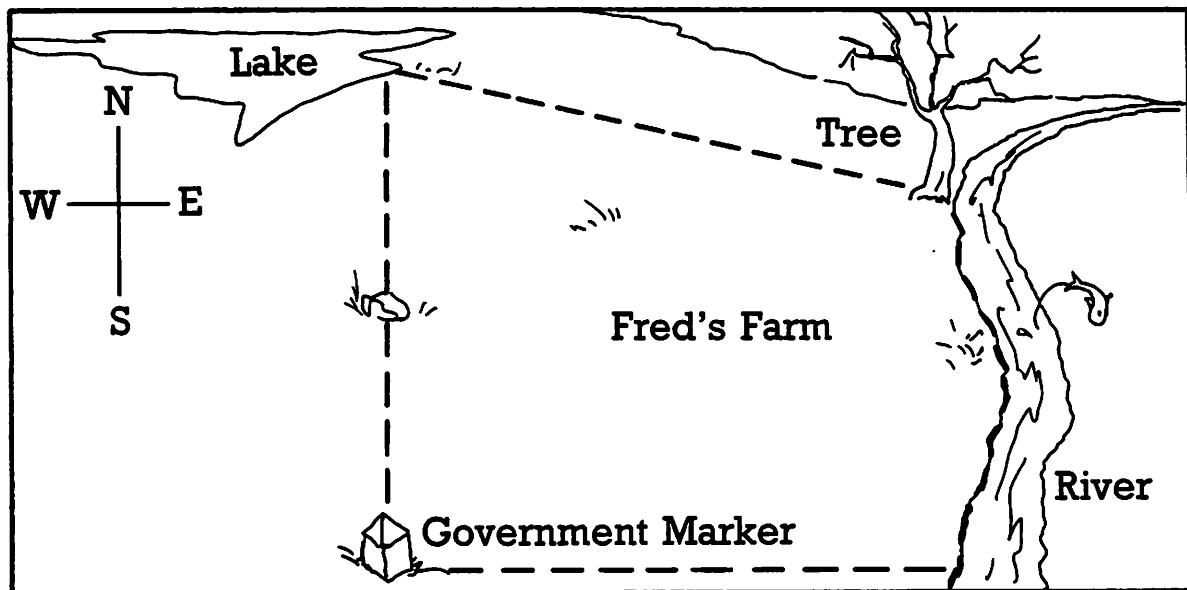
Comparative advantage approach - Under this system, the value of a piece of property is determined by looking at what similar pieces of property are selling for in that area. This price is adjusted using the same type of considerations as in the capitalization method. The comparative pricing method, however, should insure that both the buyer and the seller are aware of the land's market value at a certain time. This method is more common than the capitalization approach. It is a more informal method, and during periods of fluctuating land prices it may more accurately reflect the fair market value.

Legal Description for Land

Metes and bounds method - The metes and bounds method is a very old way of describing land. Under this system, natural landmarks such as trees, lakes, rivers, or mountains; or artificial markers such as government survey markers are used to form the boundary of a parcel of land.

To describe the land, one starts at the first marker and proceeds to the next, writing down the distance and direction from one to the other. For the description to be valid, it has to form an enclosure.

FIGURE 2.1 - Metes and Bounds



In Figure 2.1 Fred's farm might have the following description using metes and bounds. Start at the government marker and go north one-half mile to the lake. At the northeast corner go east/southeast one mile to the giant oak tree by the river. Then go south one-half mile along the river. Then go due west one mile back to the government marker.

Although the metes and bounds method is rarely used anymore, in some cases, such as when land borders a river, lake, or curvy road that would make exact lines difficult to establish, the metes and bounds method still works.

However, the metes and bounds method contains some very serious problems. Natural landmarks may change over time. Rivers will change courses. Trees will die. Lakes may dry up or shift boundaries. Even artificial markers may be destroyed by people or by nature.

Because of the problem of the nonpermanent markers, another more exact and scientific system of describing land was developed.

Rectangular survey - Under this system, land is divided by a grid of lines spanning across the country. Each region of the United States has a principal meridian point, which is used to survey all the land in that region. A line called the principal meridian runs north and south through the principal meridian point. A line called the base line runs east and west through the point.

These lines were set by government surveyors on the basis of the established longitude lines for north and south and the latitude lines for east and west. All plots of land are described by their distance from these two fixed lines.

Most land in Missouri is surveyed using the Fifth Principal Meridian Point, which is in Arkansas.

Lines run north and south every 6 miles east or west of the principal meridian. Lines run east and west every 6 miles north or south of the base line. These lines intersect every 6 miles. The squares of land created by the intersections of these lines are called townships.

Each row of townships running north and south is given a range number according to how many rows away it is from the principal meridian. Each row of townships running east and west is given a tier number according to how many rows away it is from the base line. The third tier row north of the base line is numbered T3N: Tier Three North. The third range row east of the principal meridian is numbered R3E: Range Three East. (Figure 2.2)

FIGURE 2.2 - Rectangular Survey

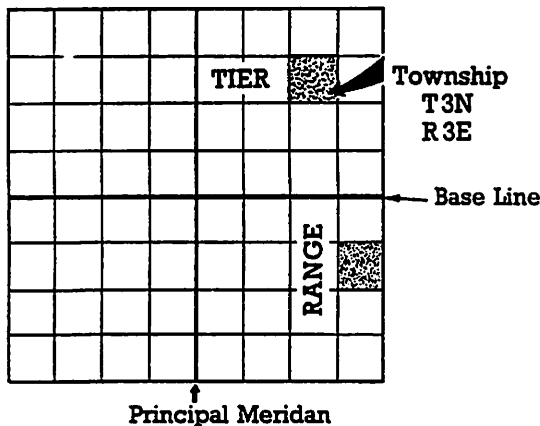


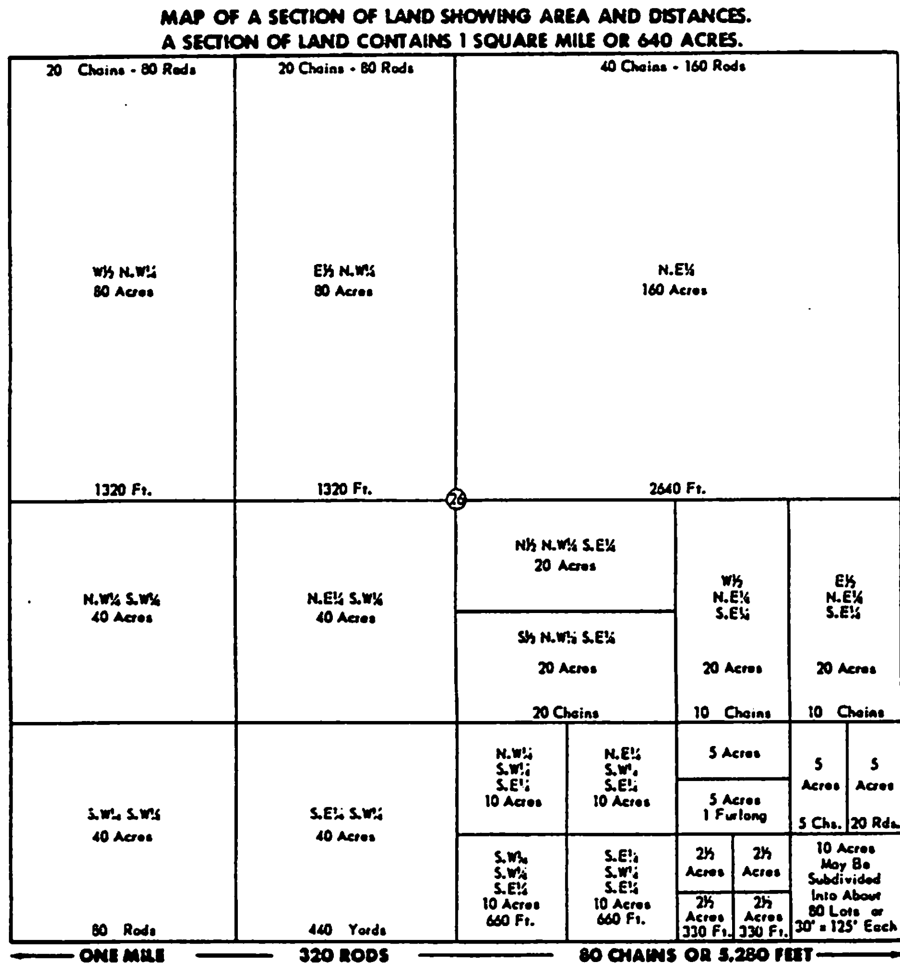
FIGURE 2.3 - Sections in a Township

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each individual township of land can be identified by a township number and a range number. The township in the upper right of Figure 2.2 is T3N, R3E.

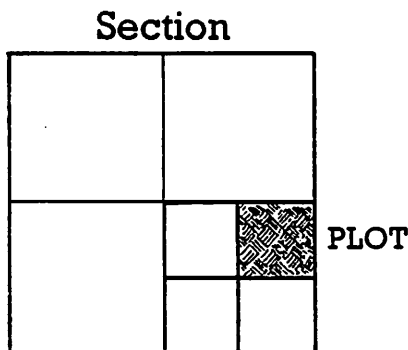
Townships contain 36 square miles of land. Each square mile, or 640 square acres, is called a section. A township, therefore, is composed of 36 sections, totalling 23,040 acres of land. The sections are numbered from 1 to 36 starting in the northeast corner and going across to the northwest side and then back again as in Figure 2.3. Sections can also be subdivided into fractions as shown in Figure 2.4.

FIGURE 2.4 - Section Breakdown



The rectangular survey is the method used in Missouri to legally describe land. Consider the section of land in Figure 2.5. What would be the legal description of the shaded area, and how many acres does it contain?

FIGURE 2.5 - Plot Within a Section



The section pictured in Figure 2.5 is from the shaded area in Figure 2.2. Assume the section in Figure 2.5 is section one of tier three north, range three east of the fifth principal meridian. To define the location of the shaded plot in Figure 2.5, start in the shaded area. It is in the northeast quarter of the southeast quarter of section one of tier three north, range three east of the fifth principal meridian. The correct way to write it would be NE 1/4, SE 1/4, S1, T3N, R3E of the 5th P.M.

As stated before, a section contains 640 acres. Therefore, the southeast quarter contains one-fourth of that, or 160 acres, and the shaded area in Figure 2.5 would contain a fourth of that 160 acres, or 40 acres.

Securing Finances

The next problem the Blackacres have to deal with is securing finances. They are able to identify four sources of money.

Investments - The Blackacres have some money in savings, and Sue has other personal assets from money she has invested in stocks and bonds.

Gifts or loans from friends and family - Rich's dad gave him some money for a home as a wedding present, and Sue's friends are willing to loan the Blackacres some money to help them get started.

Lending institutions - These include institutions such as Farm Credit Services or the local banks. These institutions can help young people like the Blackacres set realistic goals.

Person selling the land - Many times the seller will provide financing for the buyer. This method is called owner financing. The buyer and seller agree on a set interest rate, down payment amount, size of payment, and due date for the payments. There may be other agreements, but these are the main ones.

The Blackacres decide that they will borrow most of the money needed to buy the farm from a bank. Certain information is gathered by the lender to see if the person borrowing is capable of paying back the loan under the loan conditions.

Personal information - The lender will want to know the buyers age, occupation, current address, and personal credit rating. This information will give the lender an idea of the buyer's stability and past performance in meeting bills.

Business description - The loan officer will want to know how the Blackacres will use the land. The amount of the loan payment that can be generated from the use of land is an important decision for both sides to discuss.

Financial information - The loan officer will also need to know the current financial condition of the Blackacres, such as their income, savings, personal assets, fixed payments, and debts. The loan officer will need to be aware of

the current economic conditions in agriculture to compare them with the financial plans of the Blackacres.

Steps in Purchasing Land

The Blackacres have found a place in which they are interested; they have gone through the initial steps considering size, location, and condition; and estimated a dollar value for the land. They have a willing lender to help finance the farm. Now, they must consider the actual steps in buying the land.

Negotiation - The first step is negotiation. The buyer and seller reach an agreement on terms of the sale and on what is included with the purchase.

Contract - When the terms of the sale have been agreed on, it is advisable to include them in a contract. A contract is a legally binding agreement between two or more parties. The Blackacres should have the contract examined by a lawyer to make sure there are no mistakes before signing.

Conveyance - Conveyance is the actual transfer of ownership from the seller to the buyer. This is usually done through a legal document called a deed.

Recording - Recording places the title on legal record. This is important because it should reveal whether anyone else has a claim to the land or if there are boundary disputes. When the land is recorded, the file is open to public view, but the owners legal rights to the land are protected.

Points of a Contract

After consulting with a lawyer about the contract, the Blackacres have developed the following list of items that need to be included in a contract.

1. Legal description of land - preferably rectangular survey
2. Price to be paid
3. Time and place of payment
4. Collateral - used to provide security for the unpaid balance
5. Transfer of possession - estimated time to move in
6. Taxes due on the property
7. Assignment
8. Abstract of title or title insurance - An abstract is a listing of all events or actions that affect the title.
9. Deed - quit-claim, warranty, or deed of trust
10. Name of all parties involved
11. Offer and acceptance - terms of the sale
12. Sufficient payment - promise to fulfill contract

Types of Deeds

Deeds are documents that show what property is owned, who owns it, and what type of ownership they have. There are three types.

General warranty deed - The seller gives a legal promise that he or she has a good and clear title to the land. In a general warranty deed the seller owns the property free and clear of legal claims such as liens and mortgages. The seller will defend the title if anyone should challenge it in court. The buyer will be able to move in quietly and peacefully.

Quit-claim deed - This type of deed is used to convey only the seller's rights to the property. The only promise the seller is making is that he or she is the present owner. The seller does not promise that he or she has a good, clear title to the land. One should be concerned with a quit-claim deed, and it is advisable to have a lawyer check to make sure the title is correct.

Quit-claim deeds can be useful for clearing title to property. For example, a stream's course changes, and as a result the Blackacres get an extra acre of land. The land is not readily accessible by their neighbors, and they decide it's not worth the effort to cultivate. They can sign a quit-claim to the Blackacres giving them the neighbors' interests in that acre.

Deed of trust - This deed is used for mortgaged property. A trustee is named to hold the deed. If a buyer fails to make all the payment, the trustee has the power to sell the land. The money from the sale is used to pay the mortgage.

Abstract - An abstract is a chronological account of the state of the title to a piece of land. It should contain a full summary of all grants, transfers of ownership, and all records of judicial proceedings that affect the title. An abstract should also contain records of any overdue taxes or any other financial claims.

Summary

Buying land will be the biggest investment most people will ever make. To protect this investment, it is a good idea to know how to select land, to know what it is worth, to be able to finance it, and to understand the legal concerns involved. A prospective buyer should understand legal descriptions as well as parts of a contract and the different types of deeds. It would also be beneficial to have a lawyer examine the contract and the deed to protect the investment further.

Credits

"Estimating Past Farm Real Estate Values with Limited Information." Agricultural Guide. University of Missouri-Columbia: University of Missouri-Columbia Extension Division.

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Lesson 3: Starting an Agricultural Business

The role of agricultural business was discussed in Lesson 1. Lesson 2 dealt with the steps and considerations in buying land. This lesson will draw from both lessons to help explain what is involved in starting an agricultural business.

Before one opens an agricultural business, there are several factors that should be considered. The case of Debbie and Ted Shoestring can be used as an example. They are both veterinarians and want to open an animal care clinic in their community.

The Shoestrings want their business to be successful so they are carefully planning ahead. First, they talk with some of their friends and do some reading to determine what factors need to be considered in starting an agricultural business.

Factors to Consider

The Shoestrings developed the following list of important factors.

1. Personal qualities
2. Market potential
3. Organizational structure
4. Legal requirements
5. Financing
6. Management
7. Financial records
8. Promotion and advertising

After developing this list of important factors, the Shoestrings decided to look more in depth at these factors.

Personal Qualities

Self-motivation - Self-motivation is one of the most important traits a person must have to establish and operate a successful business. The Shoestrings know that starting their clinic will require extensive dedication, hard work, and effort.

Clear thinking - The Shoestrings know that the success of their business depends on the decisions they make. They must be able to think clearly about the problems they face to evaluate possible solutions. They also need to develop an identity for their business that distinguishes it from competing businesses.

Leadership skills - Leadership skills are important in developing customer relation activities and organizational management skills. These skills are vital to the success of nearly every business.

Once the Shoestrings are sure they have the personal qualities they consider important, they are ready to determine the market potential of the community.

Determining the Market Potential

The market potential is the amount of demand for a specific product or service within a given geographical area.

Factors determining market potential - The Shoestrings need to determine the number of people who own animals in the community and the types of occupations the people have. Some businesses such as mail order catalog businesses may serve a very large geographical area. Businesses like the Shoestring's veterinary practice usually serve a much smaller area such as a community or part of a community.

When the Shoestrings look for a location for their business, they should consider the distance the location is from their potential customers, so that they can cut down transportation costs. The Shoestrings should also consider the cost of operating the business, which should not exceed the market potential in a possible location for the business.

The Shoestrings need to examine their competition when determining the market potential. They should note the number of competitors in the community. The Shoestrings need to determine how much profit the competitors are making. If all the competitors are making large profits, there is usually room for at least one more business.

The Shoestrings should notice the location of the competitors in relationship to customers and potential customers. If all the competitors are on one side of town, and most of the customers are on the other side of town, the Shoestrings can get a better idea of where to locate their business. Customers generally like to do business at a place that is convenient for them.

Sources of information - There are several important sources of information to determine the market potential. First, the Shoestrings can visit the location to see what the community is like and to determine what competing businesses might be there. The Shoestrings may find local census records useful in providing information about the community.

The Shoestrings should obtain local census information from the local chamber of commerce. This will help them see how the community is growing. The chamber of commerce may also be able to provide information showing how present and past businesses have done in the community.

Real estate agents might also be helpful to the Shoestrings. Real estate agents could show them available buildings and locations as well as some idea about how the previous business did there.

People in the community could also provide the Shoestrings useful information like revealing the needs and views of the area. Discussions with community members could also give the Shoestrings an idea of how their business might fit in with the community.

Selecting an Organizational Structure

There are many different factors to consider when selecting an organizational structure. The Shoestrings have identified and discussed the importance of seven of these factors. The Shoestrings will examine each of the organizational structures closely and try to determine which structure will fit their business the best.

Length of time in business - Many small business advisors recommend that a new business begin with a simple structure such as a sole proprietorship or partnership until the business has had a chance to become established. The advisors recommend this strategy because the manager of a beginning business has many obstacles, such as marketing and record keeping, that should be overcome before a more complicated business structure is introduced.

Kind of service or product the business will provide - The Shoestrings should be sure the structure they choose for their business will work well with the kind of service or product their business will provide.

Capital requirements - Capital is often a limiting factor in beginning a business. Often, two or more people will join together to provide financing, machinery, land, or equipment to begin a business. Each type of business structure offers different methods of raising capital. Often a corporation is the most effective structure for raising large amounts of capital. A review of Lesson 1 may be helpful at this point.

Size of business - The size of a business will often affect the organizational structure used. For a small business operated by the owner, the extra work of establishing and maintaining a corporation may not be desirable. A very large business that requires millions of dollars in capital may only be able to raise the capital by forming a corporation and selling stock.

Cost of establishing and maintaining a structure - Corporations and cooperatives may require legal advice to establish. Different localities may also charge additional fees. These fees may total from a few hundred dollars to several thousand dollars each year. Cooperatives and corporations also require a more costly, detailed record keeping system than a partnership or sole proprietorship.

Tax implications - As discussed in Lesson 1, there are different tax considerations in each type of structure. Tax laws change periodically and the extreme differences in the types of agricultural businesses make it difficult to determine which organizational structure will continually result in the lowest possible taxes. It is much more practical to consider each business' tax situation on an individual basis with the advice of a tax consultant.

Liability considerations - In sole proprietorships and partnerships each person is completely liable for accidents, debts, or other claims against the business. This liability would also include any assets outside of the business. Corporations and cooperatives limit the liability to only the amount each person has invested in the business. Any assets outside the business are not affected by claims against the business.

Legal Requirements

During their talks with people in local government, other managers in the same business area, and lawyers from the community, the Shoestrings find that there are some legal requirements imposed on businesses. These specialists they talked to can help the Shoestrings understand and meet the legal requirements on their business.

Use and occupancy permits - These permits designate what a facility can be used for and how many people can be in it at a time. This is mainly for safety reasons, such as providing the correct number of fire escapes.

Health permit - Businesses that handle medicine, food, or potentially harmful products may be required to have a health permit. This certifies that the business is operating within safe limits for the people involved.

City and state licenses - The business may be required to hold a city or state license. This is to help protect the public from poor quality or shoddy businesses.

Occupational license - Many professional positions require an occupational license. This certifies that the person is capable in his or her professional area. The Shoestrings both have a doctorate in veterinary medicine, or DVM. Lawyers must belong to the bar association. Teachers must be certified by the state department of education. These are all examples of occupational licenses.

Zoning regulations - Many localities have zoning regulations designed to promote such things as public health, safety, and welfare. Where such regulations exist, the land is zoned into districts, and only certain uses are permitted in a given district. These districts include agricultural, residential, and business sectors. Agricultural districts include primarily farming. Most agricultural businesses will be restricted to the business district.

Securing Finances

Starting a new business is extremely expensive. It may be difficult for a new business to obtain all the financing it needs. The Shoestrings are no exception. They have identified several ways to finance their business.

Personal assets and savings - Personal assets and savings are often utilized

in starting a business. It is wise to keep part of one's personal assets or savings clear of the business in case of an emergency.

Gifts or loans from family or friends - Gifts or loans from family or friends can also be used to start a business. One should be sure that the money will not put an undue financial or social hardship on family members or friends should the business encounter financial difficulty.

Lending institutions - Banks, small business associations, and various government organizations can provide the capital to begin a business. Qualifications for these loans can be determined by visiting with various loan officers and reviewing the business' financial needs as well as the business' ability to repay the loan. Some sources the Shoestrings are considering for finances are the Farm Credit Services, the local bank, the Small Business Administration, and the Farmers Home Administration.

Lending institutions will require personal financial information before granting a loan. This includes determining the borrower's credit history, financial assets, and cash flow statements.

Corporations - Some businesses secure the capital they need by incorporating and selling stock or shares of the company. This method is usually more successful with larger businesses because the amount of capital involved is larger and the interest of investors in the stock is greater.

Partnerships - Partnership can also be used to establish an agricultural business. This could include one combining one persons's expertise with another person's financial resources to start a business.

Groups Dealt with in Agricultural Business

There are several groups of people that have to be dealt with in agricultural business. The Shoestrings have broken them down into five groups and explained why these groups are important to the success of the business.

Suppliers - It is essential for any business to secure supplies and services from a reputable firm. This avoids unnecessary delays and helps insure product quality. The Shoestrings will need to buy many veterinary drugs for their business. If they should buy from a questionable supplier, the drugs may arrive late or may be of poor quality. In this event, customers would be less satisfied with the business and go elsewhere.

Customers - When the Shoestrings have good quality products and services to offer, they may attract customers to their business. It is very important for them to have a good relationship with their customers. Not only do the Shoestrings want customers to come back for help if they need it later on, but the Shoestrings also want their customers to recommend the clinic to other people.

Managers - Managers are responsible for organizing the activities of the business to make sure everything gets done on time. The Shoestrings may do a

good deal of their own management work, but they will still need someone who is responsible for the business when they are gone or too busy to manage it themselves.

Employees - The Shoestrings realize employees are important for carrying out the work of the business in a dependable and friendly manner. This will help establish good customer relations and insure completion of the work tasks on time.

Financial institutions - Financial institutions are important to most businesses, including the Shoestrings', for providing loans to help meet current and long-term needs. These institutions may also offer investment advice and counseling that will help insure the success of the business today and in the future.

Financial Records

Financial records are a very important part of any business. These records are used to determine how well a business is doing, what areas it might improve in, what taxes are due, and more. The Shoestrings have determined six different types of records that they need to keep.

Income and expense - Income and expense records show the financial balance of a business. Money that has entered the business is income. Money that has been paid out is expense.

Accounts payable and receivable - This is a record of money the business owes suppliers and money customers owe the business.

Inventory - This is a record of supplies and equipment on hand. Good inventory records will help identify how fast the supplies are used and when it's time to reorder.

Employee payroll - The Shoestrings will need to keep accurate records on how much they pay themselves and how much they pay their employees. This is important to insure proper taxes are withheld from the employees' earnings as well as determining taxes owed by the business.

Sales tax records - Businesses are responsible for collecting sales tax on taxable items. It is important to keep accurate records of all sales tax collected. The business must pay this money to the government on a regular basis.

Customer account records - Customer account records allow the business to see what products or services customers want as well as how much business each customer is doing. The reason these records are needed in addition to the accounts receivable records is because some purchases are paid in cash. Cash payments may not show on the other records.

Promoting Products and Services

The Shoestrings are now aware of some of the major points in starting a business. But for their business to be successful, they must be able to draw customers. One way they can accomplish this is through advertising and promotions to make the customer aware of their services. The Shoestrings have developed a plan to accomplish this.

Identify potential customers. - The Shoestrings will try to determine what people in the community may be in need of their services. This can be done by evaluating information concerning the number and type of people in the community, past business performance, and anticipated population growth. This type of information can be obtained by checking with the local chamber of commerce, working with a marketing specialist, or doing surveys.

Determine advertising budget. - It is also important for a business to do some advertising. The advertising budget may not be very large because of other expenses, but companies that offer special services or products need to let people know about their business.

Outline advertising methods to be used. - There are several methods available. They include newspapers, telephone yellow pages, television, radio, billboards, magazines, direct mailing, and fliers. The type of media used and the way it is used will depend on the type of business, who the potential customers are, and how much money is available.

Determine frequency of advertising. - The frequency of advertising will depend partially on the type of advertising used. It is usually better to have more shorter ads than just a few longer ones. It is also important to determine what the customers might be doing during the advertising time. If the customers drive back and forth to work, a radio advertisement during that time might be more appropriate than television ads during the same time.

Determine sales approach. - The sales approach will vary depending on the type of business. Feed company representatives may stop at every potential customers' farm. Other businesses such as the Shoestrings' will use a less direct approach in advertising and promoting their service or product.

Summary

There are several factors to consider in starting an agricultural business. These factors include such things as type of business, location, finances, competition, and market potential. It is important to examine all of these closely to determine if the new business could be successful. Once a business is started, it is important to have an effective advertising campaign to let people know what the business has to offer.

Credits

Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

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Lesson 4: Using Contracts in Agriculture

Contracts are one of the most common types of business agreements. Contracts do not have to be written to be legal. One makes a verbal, or implied, contract by promising to do something or buy something. Because there is some confusion about what a contract actually is, this lesson is devoted to important types of contracts and things to look for in them.

Contracts in Agriculture

Contracts can be verbal agreements or formal written documents that form a binding agreement between two or more people or businesses. Contracts are used to help reduce risk, but they will not eliminate it. With contracts, acceptable prices and conditions can be established for a transaction in advance. This can be helpful in making management decisions.

For example, Shelly has some hay that is ready to be cut and baled. Tony has offered her a reasonable price for doing the work using his machinery. After considering his offer, she accepts. They have a contract even though no written agreement has been signed. Tony is legally obligated to perform the work at that price and Shelly is legally obligated to pay him that price. Both parties benefit because they can make plans based on their agreement.

One of the most common types of contract is the lease. A large number of contracts in agriculture are in the form of leases. Leases can involve renting land, buildings, machinery, or other types of property in exchange for cash or a percentage of a product produced with the leased items.

Key Terms Used in Contracts

To understand contracts clearly, it is necessary to have a good understanding of the terminology that is used.

Lease - A lease is a form of contract transferring the use or occupancy of property for some form of payment. A lease may be written or verbal.

Rent - Rent is the income generated from leasing property.

Lessee - The lessee is the one who holds the property or has use of the property under conditions of a lease. If the property is land or buildings, the lessee may be called a tenant.

Lessor - The lessor is the owner of the leased property. If the property is land or buildings, the lessor may be called a landlord.

Common Kinds of Leases

Most leases can be classified as either cash leases or production share leases. Cash leases require the lessee to pay a fixed amount of money for the use of an item for a set amount of time. A cash lease may be used with the following items: land, livestock, machinery, equipment, and buildings. A production share lease requires the lessee to pay a share of the product produced with the leased property.

Land lease - A land lease is a type of cash lease used when the tenant rents land and pays the landlord with cash. The tenant furnishes the labor, management, machinery, livestock, and operating expenses. The benefit to the tenant under this arrangement is that less capital is required to operate the business. Because less of the tenant's capital is used for land purchases, more of it can be used for machinery or equipment purchases. This allows the tenants to expand the business and to lower fixed costs per acre.

In addition to land, the landlord may also furnish buildings and some management in certain cases. The landlord benefits by having fewer risks and a guaranteed income. Also, less supervision is required of the landlord.

The disadvantage for the landlord is that cash leases on land generally provide a lower income and less control of the land. Rent on cropland may also be difficult to collect should the crops fail.

Crop share lease - A crop share lease is a type of production share lease in which a percentage of the crops is given as payment for the use of the land. This type of lease is best adapted to areas where land is good and nearly all tillable. Crop share leases are often used by people entering or expanding in production agriculture without a large amount of capital available.

In addition to land, the landlord may furnish buildings, a portion of the management, and a percentage of the expenses. The landlord benefits by having more opportunity for supervision of the land. Because the rent is based on a proportion of the crop, the value of the rent using a crop share lease will more accurately reflect the value of the land during that production season.

The tenant is responsible for furnishing the labor, machinery, equipment, part of the management, and any operating expenses not covered by the landlord. The tenant benefits because this arrangement requires less operating capital. Landlords are more likely to make improvements, because they are involved in what is happening. There is also less risk to the tenant in the event of crop failure because the landlord is sharing some of that risk.

Livestock lease - A livestock lease is a type of cash lease often used in the dairy industry. The lessor provides the livestock, and the lessee pays in cash. However, most livestock is leased on a production share basis and called a livestock share lease.

Livestock share lease - In a livestock share lease, the lessor receives a percentage of the livestock from the lessee as payment for use of livestock.

The lessor furnishes the land, buildings, percent of livestock, and part of the management and pays a percentage of the operating expenses. There are certain benefits to lessors. They retain an active part in management. The lessor may also be able to increase efficiency by combining resources with the lessee.

The lessee will be responsible for providing labor, machinery, part of the livestock, part of the management, and a percentage of the operating expenses. There are several benefits to the lessee. The lessee's risk is less because payments are based on the production of the livestock enterprise. The lessee may also gain experience from the guidance of a successful owner. Lessors may be more willing to make improvements. Lessees will have less of their own capital involved.

Financial lease - Financial leases are a type of cash lease. In a financial lease an item is purchased by the lessor and used by the lessee, who pays monthly or annual rental fees. This type of lease is often used for automobiles and other equipment. The primary advantage to lessees is that they can use the item without making a large down payment. This reduces the capital requirements of the business. Often the lease will contain an agreement that will give the lessee the option of buying the item at a set price at the end of the lease.

Building and machinery lease - Buildings are usually cash leased, but machinery rentals may be cash leased or production share leased.

Key Points to Consider

When entering a lease, there are certain key factors to keep in mind. All legal aspects should be considered. Both parties should benefit from the lease. If the lease involves large amounts of money, the lease should be reviewed by a lawyer. Agreements must be made on what records to keep and who will keep them. A clause should also be included to determine how differences in opinion will be settled.

It also is important to determine who has responsibility for what jobs or enterprises. An agreement should be reached on the responsibility for maintaining buildings, facilities, and land fertility and how compensation for improvements will be handled.

It is especially critical to have contracts or leases written for major items. By having the terms and key points of the lease written down, there is less chance of forgetting or misunderstanding the original agreement.

Legal Aspects

Legal advice - There is no substitute for good legal advice. This lesson is designed to help people become aware of contracts and how they are used. It is not intended to substitute for a professional lawyer's expertise in situations that are unclear and involve a good deal of risk or money.

Written contracts - Written contracts are advisable for major items involving large amounts of money. For a contract to be legal, it does not have to be in writing, but written contracts may help avoid misunderstandings. If there are misunderstandings at a later date, a written contract will provide a record of the original agreement. However, if a lease is not written properly, it may be no more binding than an oral lease.

Details of a lease - The body of the lease should include all applicable details such as who furnishes what, who pays for what, the amount and due dates of rent, and how the income will be split. Any restrictions should also be included. It also is advisable to have a clause stating how or when the lease will end.

Automatic Renewable Clauses

An automatic renewable clause will allow a short-term lease to be continued under the same conditions unless either the lessor or lessee notifies the other party before a given deadline.

For example, Joe leases Patty's farm. Patty lives far away and does not have much time to devote to the farm. Neither individual wishes to be obligated to a long-term lease. By having an automatic renewable clause in their lease, they can avoid being locked into a long-term lease and have less renegotiation time. The lease renews itself unless either party wants out by the deadline date.

Arbitration

Arbitration is a method of resolving differences between two parties such as a lessor and lessee. The lessor and lessee each select one person to be on an arbitration committee. These two selected people then select a third arbitrator together.

This committee will then listen to both the lessor's and lessee's side. After hearing both sides, the committee will make a judgment. Except for decisions involving law, the committee's decisions are final and binding to both the lessor and lessee.

Most leases contain a section on arbitration. The reason for this is to have a method in writing in case differences do arise. The arbitration method usually results in a fair, inexpensive, time-saving way of resolving differences.

Lessee's Advantages and Disadvantages in Leasing

Advantages - There are several advantages for the lessee in leasing. Fixed costs are lowered because the lessee is not paying interest on a property loan. This frees capital to be used in other areas of the business operation. Lease payments are considered a business expense so they can be deducted from lessee's income for tax purposes. Property taxes will also be lower for

lessees because they do not pay taxes on the leased property. The risk of obsolescence and faulty property is shifted to the lessor in a lease agreement.

Individuals starting in a business may find it advantageous to lease at first and buy equipment as finances allow. This helps reduce large capital expenditures all at once by spreading them over more years.

Another situation useful for leasing is when use of the leased property is only occasional. If the only time a family needs a big truck is for moving, it would be better for them to lease one at that time because the cost of purchasing a big truck would be very high.

Disadvantages - Leases also contain some disadvantages. Lessees may have limited borrowing potential because they cannot use leased equipment as collateral. In the case of land leases, the lessee does not gain anything from land appreciation or rising values. Another disadvantage to the lessee is that risks transferred to the lessor may result in higher rental payments.

Summary

Contracts are very important in agriculture. They can be written or verbal. Leases make up the largest number of contracts in agriculture. There are several key terms that people should understand before involving themselves in a lease or contract. In larger contracts, it is advisable to have a lawyer examine the contract to make sure it is fair. Leases contain certain advantages and disadvantages that will be unique to each person's own situations.

Credits

"Customary Farm Rental Agreements." Agricultural Guide. University of Missouri-Columbia: University of Missouri-Columbia Extension Division.

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Lesson 5: Business Procedures

Establishing and maintaining an efficient business operation is a difficult task. It requires an extensive amount of teamwork and communication between managers and employees. Most businesses have developed a set of business procedures to help them operate smoothly and efficiently.

Business Procedures

Business procedures are customary or established methods of managing business activities. By having an established way of operating and handling problems, managers and employees know what is expected of them. Each person knows what his or her job responsibilities are. There is also an established way of working with customers to insure that all of them are treated fairly and equally.

Business procedures will vary between businesses and locations. The policies and procedures used by one business may not be the ones needed by another. It is important that employees and managers are aware of their company's business procedures policy to maintain and increase the efficiency of the business.

Business procedures are not set in stone. Changes do occur because people and circumstances change.

Need for Business Procedures

Businesses are involved in a variety of activities each day. Business procedures are needed to provide an effective and efficient method of managing important business concerns. Some of these concerns are discussed below.

Communication - Communication is the exchange of information. There are two important types of communication: internal and external. Internal communication involves communication between employees, including managers. This type of communication is important for developing and maintaining a smooth running and efficient business environment, promoting good employee relationships, setting business goals, and providing feedback on performance.

External communication involves communication between employees and non-employees, such as customers and suppliers. In this type of communication, it is important that the employee acts in a pleasant and helpful manner to insure good public relations.

Communication takes many forms, including telephone calls, business letters, inter-company memos, and face-to-face meetings. Good speaking and writing skills, as well as people skills, are necessary for effective communication.

Bill and credit collection - Without proper procedures for billing and credit collection, the business would soon be in a state of chaos. Every sale must be properly recorded as a cash or a credit sale. Credit procedures need to be explained to customers. Procedures for granting credit and credit collection will also need to be established.

Inventory and merchandise control - Procedures will need to be developed for inventory and merchandise control. These procedures are important for several reasons. First, it is important to have what the customers need when they need it. Inventory is also needed when determining the worth of a business and is required for taxes. A good system for inventory and merchandise control will also help identify and reduce any unexplained losses that might be due to theft.

Record keeping - Businesses must keep many types of records. The Internal Revenue Service (IRS) requires that a business keep records. Records provide information for measuring past and present performance and for making decisions that will affect future activities. The types of records businesses maintain include financial records, sales and marketing records, personnel records, and inventory records.

Preparing reports - Large agribusinesses are divided into different departments. Managers from each department write reports to communicate with other departments and to provide useful information about the condition of the business to investors or owners. These reports can also be used to outline future goals for the business. Financial reports show the current financial condition of the business. Personnel reports may show the status of employees of an agribusiness, the total number employed, and/or the worker turnover. Marketing reports can show the amount and type of sales, customer or competitor profiles, or market share.

Storing and retrieving information - Think of how many problems an agricultural business might have if it lacked an efficient way of storing and retrieving information. Business activities would be slowed drastically. This is why businesses need accurate, organized filing systems. Many businesses use computer filing systems. By using computers, these businesses can store current information and retrieve it later to complete reports and records.

Guarantees, warranties, and returned products - Most businesses will have a set policy for guarantees, warranties, and returned products. A good policy can help avoid misunderstandings should a poor quality product be sold. A good policy will increase customer satisfaction and help improve public relations.

Financial Reports

Financial statements and management statements are the different reports needed in agricultural businesses.

Financial statements - There are three types of financial statements: balance sheet, income statement, and a statement of owner's equity. A balance sheet is a financial statement that is a snapshot of the asset and liability position of a business at one point in time. It is also called a net worth statement. The second type is an income statement which is a listing of revenues and expenses and resulting net income for a period of time, also called a profit/loss statement. A statement of owner's equity details changes in owner's equity for the period.

Management statements - A cash flow shows the timing of income and expenses. The inventory statement summarizes the flow of inventory. A sales report lists sales for a specified period.

Agribusiness Records

Agribusiness records are often more complex than farming records. The records are more complex because agribusinesses have more people handling money, more frequent sales, and more customers. Also, customers keep records for the farmer but not for agribusinesses. For example, Nancy Farmer sells four truckloads of beans to a grain elevator. The elevator, the customer, records the weight, dock, price, etc., of each load. If Nancy as a customer buys bedding plants from the local greenhouse, she does not keep track of that purchase for the agribusiness.

Warranties and Guarantees

A warranty is a written or implied promise that a product is free of defects and will perform as specified under normal usage conditions. Should the product fail, the seller is obligated to repair the damaged part or replace the item based on the conditions of the warranty. The buyer must prove the item had only been used under the conditions of the warranty.

A guarantee is a written or implied promise that the buyer of a product or service will receive a benefit from using the product or service. If the customer is not satisfied with the quality of a product, the company is obligated to repair or replace the product or give a partial refund on the price of the product. If a service is purchased and the customer is unsatisfied with it, the company is obligated to perform the service again or provide a partial refund.

The benefit might include reduced heating bills from using a certain type of furnace system or a faster rate of gain by feeding a certain type of livestock feed. Companies may also offer a guarantee of satisfaction for services which have been provided.

Procedures for Handling Guarantees and Warranties

The business should have a set policy for handling guarantees and warranties so all customers are treated equal. This will also help avoid confusion among

the employees and keep them from making different promises to different customers.

Warranties and guarantees should be honored if there is proof that the product or service failed to perform as it was meant to, and the customer has proof of purchase. Treating customers this way will help to insure good relations with them in the future.

Customers may be given the option of returning the product for cash, receiving a discount if the product is still usable, or exchanging the product for merchandise. All products cannot be returned. For example, fertilizer or seed that has already been used cannot be returned. However, trained people can estimate and measure the quality of the fertilizer where it is used. If the quality is low, the customer may be entitled to a discount or partial refund.

Exact policies and procedures will vary between businesses. Having an established policy for one's own business will help ensure a more effective and efficient business operation that is working to meet the customer's needs.

Summary

Business procedures are customary or established ways of doing business. They are needed to provide an effective and efficient system for making business decisions and setting policies. Business procedures are needed to handle activities such as communication, billing and credit collection, record keeping, and preparing reports. Set business procedures insure equal treatment for the customer.

Credits

Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984. Unit VII.

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Miller, Larry E. Selling in Agribusiness. 1st ed. New York: McGraw-Hill, 1979.

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Lesson 6: Agribusiness Records

As discussed in the previous lesson, agribusiness records are often more complex than farming records. Agribusinesses need a manageable system to account for inventory, accounts receivable, and income. Without a good record keeping system, the manager would lose track of the financial condition of the business.

Agribusiness Records

Agribusiness records are needed to know what has happened in the past, to make decisions for the future, and to report to outsiders. Reports may be made to the Internal Revenue Service, government agencies, owners, and lenders. Records provide the information that can be analyzed, so that reports can be developed and business decisions made.

Basic parts of an Accounting System

In an accounting system there are three basic parts. The journal is a record of original entries showing debits and credits in chronological order. Account, the second part, is a listing for a unit. It has a beginning balance, additions, deductions, and an ending balance. A business determines what will be in each unit. For example, a business may have one account for recording increases and decreases in supplies, another account devoted to increases and decreases in equipment, etc. The general ledger is the collection of all accounts.

All businesses will have a general journal and two or more special journals. For example, a firm might have four special journals: cash receipts, cash disbursements, purchases and sales, plus a general journal in which all other transactions are listed.

Credit vs. Debit

Two terms that are often confused are credit and debit. A credit is an entry on the right-hand side of an account. A debit is an entry on the left-hand side of an account. Credits and debits should not be thought of as plus or minus.

Special Journals in Agribusiness

Cash receipts, cash disbursements, and purchases journals are three special journals used by agribusinesses. The cash receipts journal provides a chronological list of cash received. A cash disbursements journal provides a chronological list of cash disbursed or paid out. A purchases journal provides a chronological list of items purchased on credit.

Double Entry Accounting

Double entry accounting is a record keeping system in which all transactions are recorded in journals: once as a credit and once as a debit. Recording every transaction once as a credit and once as a debit provides the business with a method of checking for errors. Credits and debits must offset each other or there is an error. In other words, total credits must equal total debits.

Summary

Accurate detailed records are needed for the efficient operation of an agricultural business. Small mistakes in record keeping can magnify into very large errors later. By having a more sophisticated record keeping system, many of these problems can be minimized to help increase the efficiency of the agricultural business.

Credits

Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill, 1980.

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Osborn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

Lesson 7: Managing Inventory and Determining Selling Price

Julie is the manager of a local grocery store. Her job requires her to keep inventory records and to determine the selling price of the store's products. The previous manager did not do a very good job and, as a result, the grocery store was losing money. Julie must determine what has to be done to correct the store's problems.

Inventory

The first part of Julie's job is to keep inventory. An inventory is the amount of merchandise that a business has on hand. It includes fixtures, machines, and raw or finished products.

At the grocery store, products include all items that are for sale to customers. The fixtures and machines include the shelves, office furniture, refrigerators, and cash registers. The grocery store might also have delivery trucks or cars included in the inventory.

Types of Inventories

There are two major types of inventories. Usually the size and volume of the business will determine which one will be used.

Perpetual inventory - A perpetual inventory is a written or computerized record taken from sales slips and purchase records. This inventory is automatically updated each time an entry is made showing a sale or purchase. This type of inventory is often used in businesses that sell a large volume of items. A perpetual inventory allows the manager to determine the exact size of inventory at any given time. It requires very careful record keeping procedures.

Physical inventory - A physical inventory is an actual count taken by hand of products, fixtures, and machines. Many businesses will periodically do a physical inventory to correct any mistakes that may have been made in a perpetual inventory. A physical inventory requires a great amount of time.

Factors Important in Managing Inventory

A business can keep only a limited number of items and selections in inventory due to inventory costs, storage space, and perishability. Because of this limitation, managers like Julie must make decisions about what items and amounts to keep in inventory. Several factors need to be considered to help a manager determine what should be kept in inventory.

Customer preferences - Items in high demand by customers should be kept in adequate supply. A very good way of determining which items are preferred by customers is to examine past sales records. These records can also help determine amounts of the items that should be kept in inventory. However, it is usually considered a good idea to reserve a small amount of shelf space to try new items. If a new item does well, it can be added to the regular inventory. When customers no longer have a strong preference for a particular item, the amount held in inventory should be reduced. One example of this is the transition from animal lard to vegetable oil. Many years ago, animal lard was extensively used for cooking. Due to modern technology and health concerns, many consumers prefer vegetable oil for general cooking purposes today.

Seasonal demand - When determining what to keep in inventory, it is important to consider the season. A farm implement dealer would not want a large inventory of baler twine in the winter. Instead, the dealer would prefer a very low inventory of baler twine in the winter and a much higher inventory in the summer. Many products have this type of seasonal demand. To be successful, a manager must determine the seasonal demand on different products and adjust inventories accordingly.

Inventory turnover rates - Inventory turnover rate refers to how quickly the business is able to sell the inventory of any particular item. A grocery store will have a very high inventory turnover rate on items such as bread or milk. A tractor dealer on the other hand may only sell one or two units of a particular type of machinery all year. Businesses will stock more of an item that has a high turnover rate than they will of an item with a low turnover rate.

Past inventory records - Past inventory records can be used to determine inventory in many ways. These records can be used to analyze customer preferences, seasonal demands, and inventory turnover rates. This will require the business to have a good record keeping system.

Anticipated price changes - Anticipated price changes may often influence inventory levels as the manager tries to take advantage of current or future prices. If there is an expected price increase and the cost of maintaining the inventory is less than that expected increase in price, the manager should secure additional inventory. The opposite is also true. If a decline in price is expected, inventory levels would be allowed to fall below the normal level. Additional inventory should be purchased after the price decreases.

Managing Inventory

Determining what to keep in inventory is the first step in inventory control. However, managing an inventory involves several other key strategies.

Computer records - Most businesses keep computer records on what is purchased and sold. These records can be examined very quickly to determine inventory levels, expected returns, inventory turnover rates, and billing needs. After receiving an inventory order the merchandise should be counted and inspected, and the records should be updated.

Inventory turnover - Monitoring inventory turnover involves keeping records of how quickly the inventory of a particular item sells. If an item sells very quickly, one would want to carry more in inventory. Monitoring inventory turnover can be useful in determining the proper amount for the business to keep in inventory.

Opportunity costs - Opportunity costs of inventory must be considered. Customers want to be able to purchase items without waiting several days for delivery, so businesses are forced to carry an inventory. However, because of opportunity costs, the business is limited in the amount and selection of items that can be carried in inventory. When opportunity costs of carrying certain items become too high, the business will invest its money in areas with higher returns.

Efficient storage system - For good inventory management, it is essential to have an efficient storage system. This should include well-designed shelf spaces on which products are easy to store and locate. It should also include adequate refrigeration, protection from weather, and protection from damage or theft.

Systematic purchasing steps - Inventory management involves systematic purchasing steps to replace inventory that has been sold. This process can be accomplished by computer records that note when the inventory of items falls below a certain level. This information can be used to order items needed and to insure that the business gets the items on time. Systematic purchasing steps should also contain procedures for paying for purchases.

Reducing Inventory Losses

All items in inventory may not be sold. Businesses face inventory losses in many different ways. Employee theft and shoplifting may create a very big inventory loss for some businesses. Theft costs businesses millions of dollars each year. This loss can be reduced by using proper security controls. Visiting with a security consultant on how to best control theft can be helpful.

The other major source of inventory loss is damage or spoilage. Grocery stores often have to dispose of spoiled or damaged merchandise. This loss costs the grocery store money. Stores can reduce this loss by handling items carefully to reduce damage and by rotating inventory to sell the older items first.

Strategies to Determine Selling Price

There are five basic strategies used to determine selling price. The strategy used will vary between products and type of business being considered.

Cost plus markup - Many businesses simply determine the cost of the item and add on an additional amount to cover business operating costs and a reasonable profit.

Suggested retail price - Often businesses will sell name brand products and charge the suggested retail price. Manufacturers of these products have more control over the price than the local business selling the product.

Loss leaders - Many times businesses such as grocery and clothing stores use loss-leader pricing. With the loss-leader strategy, certain products are reduced below cost to attract customers. The logic of this strategy is that after customers are drawn in, they will usually buy more than one item, and the business can recapture its loss with the additional sales.

High markup items - Many times stores will place certain items in the checkout lanes. Individuals buy these items on impulse while waiting in line to make their purchases. These items are very profitable for the store because they have a large markup.

Clearance pricing - Occasionally a store will have too much inventory on a particular item, or it will have purchased specific items at a lower-than-normal cost. This may encourage the business to use clearance pricing. With clearance pricing, the prices are reduced to approximately the actual cost. These lower prices encourage customers to purchase the items, thus clearing out the excess inventory. Clearance pricing is often used at the end of a season to reduce the inventory of out-of-season items.

Discounts - Businesses will often use discounts in determining price. Discounts are used for several reasons. A discount can serve as a price adjustment; it can be used to stimulate sales, and it can also be used to help manage inventory. Some businesses give discounts for early season purchases to reduce the amount of time and cost of carrying the item in inventory.

Types of Discounts

Cash discount - The customer is given a cash discount for paying cash at time of purchase. Cash discounts are often around two or three percent of the purchase price. Most businesses consider cash to include currency, coins, and checks. Businesses give this discount to encourage customers to pay cash so the business can quickly reinvest the money. Cash discounts are figured after all other discounts have been applied to a purchase price.

Quantity discount - It is often more convenient for the business to sell a large quantity of an item than it is a very small amount. Therefore, businesses will often give discounts for volume purchases.

Bulk discount - Bulk discounts are used in businesses such as feed mills. Livestock feed can usually be purchased either packaged in 50-pound or 100-pound sacks, or it can be purchased without being packaged, which is called bulk form. The feed is moved directly from the feed bin by grain augers. Because the feed mill does not have to package or handle the feed by hand, it has lower costs. These savings can be passed on to the customer to encourage the customer to buy in bulk.

Early season discount - Early season discounts are used to encourage customers to buy items before the season in which they will be needed. Agribusiness managers will often use these discounts to encourage producers to buy seed, chemicals, fertilizer, and other inputs during the latter part of the winter. This helps the business to save storage space and plan the quantity of items needed.

Summary

Inventory management is important for the successful operation of a business. Whether one keeps a perpetual inventory or completes a regular physical inventory, inventories are crucial in determining business needs. A good record keeping system will provide much of the information about what items and amounts to keep in inventory. An efficient and secure storage area is needed to prevent losses due to theft, damage, or spoilage.

Inventories play a role in determining which pricing strategy to use. The amount held in inventory may also affect how the price is determined. This is done through loss leaders, clearance pricing, discounts, and suggested retail prices.

Credits

Lee, Delene W.; Jasper S. Lee. Agribusiness Procedures and Records. New York: McGraw-Hill, 1980.

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Lesson 8: Agricultural Business Customer Transactions

A business manager must be competent in dealing with customer transactions. These transactions include collecting sales tax, making correct change, accepting and cashing checks, recording credit card and account sales, and handling customer relations. The manager must also be certain that each employee handling customer transactions is capable of doing so. Employees learn these skills through on-the-job training, vocational programs, and self-directed study. Usually, the manager must learn to handle customer transactions before becoming a manager.

Sales Tax

On most items a customer purchases, the manager or employee will add an additional charge. This charge is called sales tax. Sales tax is charged as a percentage rate on the price of most goods. Sales tax is not charged on services. Each state has its own sales tax and uses the revenue differently. Figure 8.1 below shows how Missouri breaks down its sales tax. Counties and cities determine their own additional sales tax, which is added to the state sales tax. This is why the sales tax rate varies across the state.

FIGURE 8.1 - Missouri Sales Tax

Tax Area	Percent of the Dollar
General Sales	3.0
Education	1.0
Conservation	.125
Park and Recreation	.10
City and County	*0 to 2.0
Transportation	*0 to 1.0

*Rates vary between counties and cities.

In most cases, the business will collect the tax and send the money to the state's department of revenue. Sales tax collection requires the business to have good record keeping practices for reporting and paying the proper amount of the tax.

Tax Exempt Items

There are many items that are exempt from sales tax in Missouri. Being exempt means no sales tax is collected on an item. Tax exempt items may change periodically. There are four basic determiners of sales tax exemption.

Production items - Most items used in the production process are not subject to sales tax. In agriculture, this would include fertilizer, machinery, seed, and feed. These items are used to produce raw products that are used to manufacture a wide variety of consumer and industrial products. When these products are sold at the retail level, sales tax is charged.

Usage of item - The usage of an item will often determine whether sales tax should be collected. For example, an item such as lumber has many uses. If lumber is purchased to repair a farm building or fence, it should be exempt from sales tax because it will be a business expense. If, however, the same lumber is used to build a house, which is not a business expense, sales tax is collected. As one should quickly see, it can be quite difficult for a business to determine when to collect sales tax.

Sales for direct consumption - Many producers will occasionally sell items to neighbors. If the sale is for direct consumption, such as selling a market hog to a neighbor, the producer should not collect sales tax as long as all the following conditions are met:

1. Less than $3,000 worth of direct consumption items is sold per year.
2. The producer does not advertise as a retail business.
3. Sales are not on a regular schedule and are not numerous.
4. The producers must be able to meet any additional local requirements.

Tax exempt groups - Charitable organizations such as churches and government-approved non-profit organizations are exempt from paying sales tax. Government agencies including all levels of the government, public schools, public utility companies, and cities are also exempt from paying sales tax.

Tax exempt groups use certificates of exemption. A blanket certificate states that its owner is exempt from paying taxes. Owners of this type of certificate can have it put on file at businesses where the owner shops. The certificate provides the businesses with proof that the owner is tax exempt.

A unit certificate is used for individual purchases. If the tax exempt group does not have a blanket certificate at a business, it can use a unit certificate to prove the tax exempt status for a specified purchase.

Making Change

Handling money is one of the most important tasks the employee will perform. Therefore, it is essential that the manager and employee know the proper procedure for making change. First, state the amount of the purchase and the amount received. Place the amount received where the customer can see it. This is important to reduce any confusion or false claims about the money received.

One should then use the addition method of making change. The correct change should be given back using as few bills and coins as possible. For example, Johnny purchases $32.71 worth of groceries. He gives the cashier two $20 bills, or $40. The cashier places the $20 bills where Johnny can see them. Then the cashier will give Johnny the proper change. The cashier will start counting the amount of the purchase and give enough change to reach the next whole dollar. Then the cashier would give enough $1 bills to reach the next $5 increment and so forth. In this example, the proper change Johnny would

receive is four pennies, one quarter, two $1 bills, and a $5 bill. This equals $7.29.

After the correct change has been given to the customer, package the merchandise and give it and a copy of the sales ticket to the customer. Then place the money in the proper place inside the cash register. Handle requests such as making change after the previous steps have been completed.

Benefits of Checks to the Business

Paying bills with checks - Checks help make record keeping easier. A checkbook ledger provides a written record of how money was spent, and a canceled check provides evidence of payment. Checks are also more convenient than cash for most business purposes.

Accepting checks for payment - Accepting checks reduces the amount of cash that the business will have on hand. This will reduce the risk of being robbed and having employee thefts. Many customers also prefer to use checks for record keeping and convenience. These customers are most likely to do business with a place that will accept checks.

Procedures for Accepting Checks

Each business may have a slightly different policy for accepting checks. Below is a list of steps used by most businesses for accepting checks. These procedures are used to minimize the number of bad checks.

1. Follow the policy of the business.
2. Check the date on the check.
3. Compare the amount in numerals with the amount written in longhand.
4. Check the signature with the name on the check.
5. Make sure the check is made out to the business.
6. Ask for identification and compare it with the name and address on the check. This procedure should be followed unless the person is a very well-known customer or a regular customer in good standing.
7. Call the manager if unsure.
8. Initial the check.
9. Treat it as a cash sale.
10. Stamp the check for deposit only.

Credit Card Sales

Customers may use credit cards to pay for their purchases. Accepting credit card sales requires a slightly different set of procedures for the business. First, verify the card, unless the customer is very well-known. This is done by checking the amount of purchase against the credit card limit. Next, check the card against the list of stolen cards. Also, make sure the card has not expired.

Imprint the sales slip with the credit card on the imprinter machine. Be sure to turn the machine to the proper dollar amount first. Have the customer sign the slip and compare it with the signature on the card. Give the customer the card and the appropriate copy of the sales slip. Destroy the carbon and record and file the remaining copies of the sales ticket in the proper places.

Sales on Account

Many businesses will allow customers to purchase items on account. In this process, the business keeps a record of the customer's purchases, and the customer agrees to pay the account based on the account policy of the business. There are several procedures that need to be followed to sell items on account properly. These procedures are listed below:

1. Check to see that the customer has an account. Be sure the customer has not charged over the account limit.
2. Follow established policy concerning who can charge on the customer's account.
3. Record complete description of charged items and the terms and conditions on sales ticket.
4. Have customer sign sales ticket. Check signature.
5. Give the customer the appropriate copy of the sales ticket.
6. Record the sales ticket in the proper ledgers.
7. Follow up the transaction with normal billing procedures.
8. Credit the account when payment is received.

Customer Relations

Good customer relations are vital to the success of any business. A well-satisfied customer is more likely to come back for future purchases. Also, a reputation for being fair and honest will help attract new customers.

Follow-up service is an important part of customer relations. This includes being willing and able to answer customers' questions and complaints regarding products or services the business has provided them.

Summary

Business managers and employees must be competent at performing customer transactions. This includes collecting sales tax, being aware of sales tax exemptions, making change, handling checks, recording credit card sales and sales on account, and being able to effectively deal with customer relations. All these components are essential to the success of the business.

Credits

<u>Business Procedures and Records</u>. Ohio State University: Agricultural Education Services, 1977.

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Lesson 9: Preparation and Importance of Sales Tickets

Leslie's business class recently toured the local farm cooperative. The students were able to see all the parts of the operation. Leslie was most impressed by the detail required of workers in the front office. The manager of the cooperative explained that such accuracy was necessary for the business to operate efficiently. The manager said the starting point of an efficient business operation involves a sales ticket.

Sales Tickets

A sales ticket is a document that provides a written record of a sales transaction. Sales tickets are important for the business because of the large number of transactions occurring each day. By having a written record completed at the time of the sale, the business is better able to account for income and changes in inventory.

Sales tickets provide the foundation for the bookkeeping or accounting system because the sales ticket is a complete written record for each sales transaction. Sales tickets are also a record of the amount of business each customer does. This information is important for patronage refunds and quantity discounts. Sales tickets also provide customers with a record of their purchases.

Information on a Sales Ticket

Sales tickets contain several different pieces of information. Each item on the sales ticket is important in record keeping. Sales tickets should include the following:

1. Date of sale
2. Customer's name and address
3. Complete description of each item sold
4. Discounts, sales tax, and amount due
5. Method of payment
6. Any special instructions or directions

Completing a Sales Ticket

A sales ticket should be prepared any time goods or services are sold or whenever customers pay on their accounts. One should be sure to fill in the date, customer's name and address, and a description and unit price of each item sold. The amounts are subtotaled, and any discounts are subtracted. Sales tax is then calculated on any taxable items and added in. Any delivery, mixing, or other charges are added in. The grand total is the original subtotal, minus the discounts, plus the sales tax and extra charges.

It is also important to note the method of payment, amount received, check number, and any cash back on the sales ticket. The buyer should sign the sales ticket, and the salesperson should initial the sales ticket. The customer should be given a copy, and the remaining copies should be filed in the appropriate place at the business. Any ruined tickets should be voided and filed with the other tickets to avoid any confusion concerning the location of the ticket.

Tickets should be filled out in a legible manner as illustrated in Figure 9.1. The policies of the business should be followed at all times. The sales ticket should be carefully reviewed for math errors before the sale is final.

FIGURE 9.1 - Sample Completed Sales Ticket

AGRIBUSINESS NAME
AND
ADDRESS

00001

TERMS: 2/10 Net 30 DATE August 10 1987

CUSTOMER NAME: Paul Thacker

ADDRESS: Route #10, Box 301 Anytown, MO 65500

Sold by	Cash	Check	C.O.D.	Charge	On Acct.	Mdse. Ret.	Paid Out
MJM		✓					

Qty	Description	Price	Amount
10	Bales of International Twine (taxable)	$ 33.50	$335.00
1	Garden hoe (taxable)	3.00	3.00
2	50# bags of dog food (taxable)	8.80	16.60
			354.60
	less early season discount on twine	2.50/bale	-25.00
			329.60
1000#	Grinding (tax exempt)	.40/cwt	4.00
	Check #475 for $ 360.00		
	Purchase 354.12		
	change $ 5.88		
	Sales Tax at 6.475% Tax		21.34
	TOTAL		$354.12

Sales Ticket Number 00001

RECEIVED BY Paul Thacker

All claims and returned goods must be accompanied by this ticket

Using Sales Ticket Information

Business uses - The business uses the information to compute daily cash balances, to update inventory records, to complete sales tax reports, and to maintain a record of sales. Sales tickets also provide information needed for billing.

Customer uses - Sales tickets provide the customer with a record of expenses that can be used for income tax purposes. The records provide proof of actual purchases. They also provide customers with records of their accounts in case there is a dispute concerning billing. Sales tickets also serve as proof of purchase when customers return items.

Summary

Sales tickets are a written record of a sales transaction. Information generated by sales tickets provides the basis for record keeping in a business. This information includes dates, customer's name and address, description of each item sold, price paid, discounts, and method of payment. The business uses this information for record keeping, taxes, and inventory control. Customers use sales tickets to document income tax returns, to provide a record of purchase in case of disputed accounts, and to prove purchase when returning items. By following good business procedures when using sales tickets, both the business and the customer gain a valuable and efficient source of information for record keeping purposes.

Credits

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Lesson 10: Customer Credit

Janet works after school at her uncle's feed store. Her job is to enter all sales tickets into the computer at the end of each day. She then prints out a daily report showing the amount of sales and which items are low in inventory. She enjoys her job, but it is not always easy.

When she began working, she noticed many of the customers did not pay for the feed at the time they purchased it. Instead, the customer would sign the sales ticket and have the purchase put on account. Janet's uncle explained to her that it was sometimes necessary for him to extend credit to his customers. This allows his customers to purchase products when they need them and to pay when money is available. Janet listened carefully as her uncle explained how business dealt with extending credit to customers.

Customer Credit

Customer credit is a method of obtaining goods or services with a promise to pay later. Customers who charge purchases at the feed store are receiving credit. They are called debtors. The creditor is the one granting credit. In this case, the creditor is the feed store.

People receiving credit usually have to pay additional charges called interest. It is expensive for the business to offer credit. The interest charge helps offset that cost. Many businesses do not charge interest if the customer pays his or her account in full before the end of the month.

Advantages and Disadvantages

Janet's uncle explained that there are several advantages and disadvantages of extending credit to customers.

Advantages - Credit is convenient for customers because it gives them an easy way to make purchases without requiring them to have the cash on hand. Offering credit can increase sales because the convenience will draw in many new customers and keep old ones coming back.

Many of the customers at Janet's uncle's store are farmers who only sell livestock and crops at certain times during the year. Because of this, these customers might not have enough cash during certain parts of the year to make purchases when they need to. Spreading purchases out over the year is also beneficial to the business because it helps to create a smooth cash flow.

Disadvantages - Extending credit to customers increases the amount of paperwork for a business. This costs the business time and labor. Another problem with credit is that the business may be left with some accounts that cannot be collected.

Extending credit also ties up some of the business's operating capital. The business manager should be aware of the business's cash flow to decide how much customer credit the business can handle at any specific time. Because of this, the business may have to raise prices to cover increased costs.

Janet is beginning to understand the challenges of managing a business operation. Her next question is: How does a business establish a policy for extending credit?

Credit Policy

The purpose of having an established credit policy is to provide maximum profit for the business and to make sure the credit agreement is understood by everyone involved. Losses due to bad debts and the cost of administering credit should be considered when establishing a credit policy. It is also necessary to plan some flexibility in a credit policy to provide for unexpected changes in the economy. The following components are all essential parts of a credit policy.

Terms of sale - The terms of sale must be established. This includes the amount of time the debtor has to pay for goods, and the penalties for late payment. The terms may be stated on the sales ticket as discussed in the previous lesson.

Credit eligibility - Credit eligibility is based on an established set of standards for each business. These standards allow a quick and fair decision to be made on customers applying for credit.

Limitations on credit - Most businesses will have a set policy on credit limitations. This limit will vary between customers and is based on the history of the customer's account and the customer's financial condition.

Billing and collection procedures - Billing and collection procedures are established methods used by businesses for billing and collecting payments. These policies vary widely between businesses and according to the amount of credit extended. These procedures are designed to try to collect the payments without losing the customer.

Written agreements - Written agreements are often used for large purchases on credit. These agreements include the place, time, method of payment, and the interest rate. Written agreements may also be referred to as promissory notes.

Security - Secured loans are backed with collateral. Collateral is an asset that belongs to the debtor. The creditor has a right to take the collateral if the debtor fails to pay off the loan. Some loans do not require security. These are called unsecured loans. Unsecured loans are more risky from the business standpoint and may have a higher interest rate.

Credit policy is controlled by two main laws. These laws are the Federal Equal Credit Opportunity Act and Federal Consumer Protection Act of 1968.

Federal Equal Credit Opportunity Act - This law prevents creditors from discriminating against consumers on the basis of sex, marital status, race, and religion. This is important because everyone needs to have an equal chance of developing a personal credit rating.

Federal Consumer Protection Act of 1968 - This act is often referred to as the Truth in Lending Act. It applies to credit that does not exceed $25,000 and to all real estate transactions, no matter what the amount. The law states that a copy of the terms and conditions of a credit agreement be given to the applicant. The terms and conditions are listed in the disclosure statement of the credit agreement.

The disclosure statement must contain certain items. The method of calculating the finance charge must be explained in it, as well as the time period for payments with and without a penalty charge. It must contain a description of any lien or claim the creditor has on any asset or collateral. The minimum payment required for each billing period must be included. It must include the method used to determine the balance or amount on which the finance charge is made. The finance charge is the interest rate the creditor charges.

Credit Standing

Once the business has developed a policy on extending credit, the manager needs a way to determine whether a customer should be given credit. The business credit policy sets the guidelines for determining credit standing. Credit standing is the ability of the customer to pay debts. It is based on what is commonly called the three C's of credit.

Character - Character refers to the honesty and responsibility of the individual applying for credit. This is based on past performance of meeting payments and other obligations.

Collateral - Collateral refers to the assets that the individual or firm can offer as security for the loan. Should the individual fail to make loan payments, the collateral is forfeited to the lender to satisfy the loan.

Cash flow - Cash flow refers to the ability of the individual or firm to make all credit payments and still be able to pay normal expenses on a regular basis.

Sources of Credit Information

There are several sources of credit information. The creditor may have the debtor fill out a credit application form asking for certain information. The creditor might check with other creditors to determine how well the applicant repays debts. On larger accounts such as bank loans, the creditor might require a personal interview. Another source of credit information is the local credit bureau. The credit bureau is able to check on the credit history of the credit applicant. The creditor may also seek information from the applicant's employer.

Billing and Collection Procedures

After a few weeks, Janet became responsible for billing procedures. Her uncle took time to carefully explain what a billing statement was and how to prepare one.

Customers generally wait for statements before they make payments, so it is important to have a regular schedule of sending out statements. Generally, the first statement is sent when the purchase is entered in the records; the second is sent when the bill is due, and the third is sent when the bill is delinquent.

Billing statements should contain everything customers need to know about their purchases. There are eight different items that should be on a billing statement.

1. Date of purchase of each item
2. Description of items purchased
3. Quantity purchased
4. Price
5. Total amount due
6. Date payment is due
7. Terms such as penalties or interest
8. Address where the payment is to be sent

Delinquent Credit

Delinquent credit occurs when the debtor falls behind on making payments. Collecting these accounts can be very expensive and time consuming for a business. It is essential that the business follow up on overdue accounts quickly.

After an account is about 30 days overdue, telephone calls and letters are sent to remind the customer that the account is overdue. The second step is a personal visit by a business employee such as the credit manager. This visit should be conducted with discretion to try to get the payment and keep the customer. If the customer is unable to make full payment, a schedule for payments should be negotiated and agreed upon.

The third step is hiring a collection agency. This service costs the business a good deal of money and may not be worthwhile for small accounts. The final step is to have an attorney file a lawsuit. This step is only used on large accounts because it is very expensive.

Janet has to handle some delinquent accounts. It is not an easy job, but she knows it is important. Uncollected accounts decrease profit and increase expenses of the business. This can make costs higher for all the other customers.

Summary

Customer credit is a method of obtaining goods, money, or services with a promise to pay at a later date. There are many advantages and disadvantages for businesses offering credit to customers. The biggest advantage is convenience for the customer, and the biggest disadvantage is increased cost to the business. Credit policies are established to set certain conditions for extending credit and determining credit standing. The business must also be aware of the laws involving customer credit.

Credits

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Lesson 11: Loans for Agricultural Businesses

Operating an agricultural business requires a substantial amount of capital. Few businesses have enough capital to pay all their expenses in cash. For most businesses to operate, they must secure capital through loans.

Types of Loans

There are three types of loans available for agricultural businesses. These types are based on the length of time the money is needed. The intended use of the loan will determine which type is chosen.

Short-term loan - Short-term loans are for less than a year. These loans are used for current operating expenses, for unexpected expenditures for repairs and medical bills, and to even out the cash flow of a business during months of low sales. Short-term loans include purchases on account.

Intermediate-term loan - Intermediate-term loans are from one to seven years in length. These loans are commonly used for machinery and equipment purchases, building improvements, and auto loans. Intermediate-term loans are usually paid back in monthly, semi-annual, or annual installments.

Long-term loan - Long-term loans are more than seven years in length. Examples of long-term loans would include loans to purchase land, buildings, and houses. Long-term loans might also include extensive remodeling or retooling of an agricultural business.

Borrowing Money

Money could be borrowed for planned investment, to offset expenses in the cash flow, or for emergency expenses. A business operation may borrow and repay loans on a regular basis because the business does not have enough capital of its own. In the long run, however, the business can only afford to borrow money as long as the return is greater than the interest cost. For example, in the long run if a business must pay 10 percent interest on borrowed capital, it must earn over 10 percent on that money before it would be feasible.

Emergency expenses are unexpected expenses that cannot be delayed and are too big to be taken out of the current cash flow. They have to be paid immediately if the business is to keep operating. Examples of this type of expense include replacing a blown engine in a delivery truck at a feed store or repairing a combine during harvest time.

The manager of any business must be aware of when to borrow money. Money should not be borrowed for unnecessary items or without careful consideration. In the long run, the cost of borrowing money must be made up by increased returns, or the business will worsen its financial position.

Borrowing Safely

A key concern for the manager is how much the business can borrow safely. The manager knows it is profitable to borrow money if the returns are greater than the cost of borrowing, but is there some point where the risk of borrowing money becomes too high?

Most managers and lenders agree that a safe level of borrowing is the point at which the asset-to-liability ratio is 2-to-1. This means that for every dollar the business owes, it has two dollars worth of assets. If this ratio decreases, the business has too high a level of debt. For example, if the ratio was only $1.50 assets to $1 liability, the business may be headed for financial trouble.

A good rule is to have the lender match the business dollar for dollar. For example, if the business borrows $1,000 and has $1,000 of its own, it has $2,000 of assets and $1,000 of debt. This is an asset-to-liability ratio of 2-to-1.

The type of assets or business, as well as general economic conditions, will affect the amount that the business can borrow. The age of the manager and his or her outside income will have some effect on the amount banks are willing to lend.

Leverage

Leverage is the use of someone else's money with one's own to provide financing for a business. For example, if Janet's uncle owns 40 percent of the feed store and borrows the other 60 percent, he is said to be 60 percent leveraged. The 40 percent he owns is called his equity.

Using leverage is profitable as long as it increases earnings more than the expense of borrowing money. Using leverage can also result in larger losses if the business has financial problems because interest has to be paid on the borrowed money. Study the following example to see how this works.

EXAMPLE: If the current rate of interest is 10 percent, Janet's uncle must have a return greater than 10 percent on the borrowed money to make a profit on that money. Currently that money is returning 15 percent, so he is earning five percent profit by borrowing money. Last year he only earned eight percent on the money he borrowed, but he had to pay 10 percent on it. He lost two percent on borrowed money during that year. Assume he borrowed $10,000 both years. Table 11.1 compares the two years.

TABLE 11.1 - Returns on $10,000 Borrowed

	Return on Borrowed Money	Cost of Borrowed Money	Net Returns	Profit or Loss
Year 1	8%	10%	-2%	-$200
Year 2	15%	10%	+5%	+$500

Sources of Loans

TABLE 11.2 - Loan Characteristics

SOURCE	TYPES OF LOANS	CHARACTERISTICS
Commercial banks	short, intermediate, long-term	will loan on almost anything
Farm Credit Services		
Federal Land Bank	short, intermediate, long-term	loans on real property only; requires a 5% stock purchase
Production Credit Association (PCA)	short, intermediate, long-term	loans on personal farm property and operating capital; requires a 10% stock purchase
Life insurance companies	short, intermediate, long-term	a life insurance policy may serve as collateral; borrow against a policy
Farmers Home Administration	short, intermediate, long-term	primarily loan guarantees, housing loans, and limited resource loans
Small Business Administration	short, intermediate, long-term	primarily loan guarantees for small agribusiness
Dealer credit	short, intermediate-term	almost exclusively on the product the dealer is selling, e.g. cars, tractors, feed, fertilizer
Individuals	short, intermediate, long-term	used primarily for the sale of real estate with owner financing and personal loans to relations and friends
Savings and loans	long-term	loans on real property, mostly housing

Table 11.2 provides information about the various sources for loans. The amount, length, and purpose of the loan; repayment method and period; and finance charges will vary for each source. Managers should shop around before deciding which loan best fits their needs. Each loan source may have different eligibility requirements that must be met to qualify for a loan.

Comparing Interest Rates

To avoid confusion and provide consumers with a way to compare different types of loans, Congress passed the Truth in Lending Act. This act established Annual Percentage Rate (APR) as a method of comparing the effective interest rate of various loans. The exact formula for computing APR is very complex and requires a computer. However, the following formula can be used to estimate APR.

$$\frac{2 \times (\text{number of payment periods in one year}) \times \text{total interest}}{\text{balance received} \times (\text{the total number of payments} + 1)} = \text{APR}$$

Using this formula, an individual can compare the annual percentage rate for various types of loans. In the following example Leon needs to determine which plan would be best for his needs.

EXAMPLE: Leon needs to borrow $12,000. He plans to pay the loan off using semiannual payments for three years. He compares the stated interest rates of simple, add-on, and discount loans. The original loan balance is the amount that Leon would actually receive for that type of loan. See Table 11.3.

TABLE 11.3

	Plan I simple interest	Plan II add-on	Plan III discount
Original loan balance	$12,000	$12,000	$10,800
Payment 1	2,600	2,600	2,000
Payment 2	2,500	2,600	2,000
Payment 3	2,400	2,600	2,400
Payment 4	2,300	2,600	2,200
Payment 5	2,200	2,600	2,200
Payment 6	2,100	2,600	2,100
Annual Percentage Rate (APR)	10%	17.1%	11.1%
Quoted Rate	10%	10%	10%

Leon finds that the stated rate for all three types of loans is 10 percent. As he compares the different plans, Leon finds that the APR is different for all three types of loans. Notice that in Plan III, Leon would only receive $10,800 of the $12,000 loan.

Credit Instruments

Credit instruments are written documents that are used to transfer funds or credit from the creditor to the debtor. There are several different types of credit instruments used in agriculture.

Draft - A draft is a check written by the creditor to the business the debtor is purchasing from. For example, Janet, the debtor, might borrow money from a bank, the creditor, to purchase computer equipment from a local computer store. The bank would write the check directly to the computer store for the amount Janet plans to spend.

Note - A note is a written promise to pay. After the debtor signs a note, the bank may transfer money to a debtor's account or provide the debtor with a draft.

Warehouse receipt - A warehouse receipt is a receipt for grain stored in a warehouse. The farmer still owns the grain, but the warehouse has possession. The warehouse receipt can be used for collateral, or it can be used to transfer ownership.

Mortgage - A mortgage is a written claim which the creditor holds on property that has been used as collateral. It often involves long-term loans for real estate purchase.

Lien - A lien is a legal claim to property that is filed with the County Recorder's office by the creditor.

Bill of lading - A bill of lading is a receipt for items in transit. The bill of lading provides proof of ownership.

Sales contract - A sales contract is a written agreement specifying terms and payments for the sale of an item.

Summary

Loans are an indispensible tool for agricultural businesses. Not only do many businesses extend credit to their customers, but they also borrow money for short-, intermediate-, and long-term needs. The manager's goal is to use loans as leverage to increase the net income of the business. To accomplish that goal the manager must be able to determine safe borrowing procedures for the business and then evaluate the different sources of credit to determine which one meets the needs of the business.

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Lesson 12: Conducting a Financial Analysis

Accurate financial records provide a key tool to sound decision making in any kind of business. In secondary agriculture, students are required to keep financial records on their supervised occupational experience (SOE) program. As many students have noticed, these records provide valuable information that can be used in a financial analysis to make substantial improvements in the projects.

Financial Analysis

A financial analysis is a series of steps used to determine the financial condition of a business. It can be thought of as a physical health checkup. During a checkup, the doctor will use certain indicators such as blood pressure, weight, height, and age to determine a person's health. During a financial analysis, the manager will use certain financial records as indicators of the health of the business.

Reasons for a Financial Analysis

There are many reasons to conduct a financial analysis. Four common reasons are discussed below.

<u>To determine credit needs</u> - A good financial analysis will provide the information to determine the credit needs of the business. This information is used to plan ahead so the proper amount of money can be borrowed in time to meet credit needs.

<u>To obtain a loan</u> - Most lending agencies want to know certain information about a business before they will lend it money. This information is used to evaluate the risk of loaning money to that business. This information can be provided by a financial analysis. For example, if a business wants to borrow money to increase its scale of production, it will need to be able to provide financial records such as a financial statement and a cash flow summary.

<u>To improve profitability</u> - The information from a financial analysis can be used to improve the profitability of the business. This is accomplished by studying the analysis and determining what areas can be improved, what expenses can be cut, and what enterprises should be expanded. Without adequate records, this would be very difficult to accomplish.

<u>To help manage taxes</u> - A financial analysis can also provide information for tax management decisions. If records show that a certain year is going to be a very profitable year, funds might be used to purchase supplies and equipment that will not be needed until the following year. This would allow the business to reduce its taxable income this year. If income is low this year, the business might postpone some of its payments until next year. There are

many tax management strategies to maximize after-tax income, but they require good financial records and analyses to accomplish.

Questions to Consider During a Financial Analysis

For the business to gain the most from a financial analysis, the manager should have certain questions in mind while conducting the analysis. Some basic questions are listed below and are discussed individually.

1. Is the business the proper size?
2. Which enterprises were profitable, and which ones were not?
3. Why did the unprofitable enterprises fail?
4. What would be the effect of expanding successful enterprises and reducing unprofitable ones?
5. Is the debt load or repayment schedule too restrictive?

Size of the business - Businesses may be either too large or too small. During the late 1970s, many agribusinesses expanded due to favorable conditions facing agriculture. However, conditions reversed in the early 1980s, and, as a result, many agribusinesses found that they had become too big and inefficient. As a result, many of these firms had to streamline their operations to reduce costs.

Profitability of individual enterprises - A good financial analysis should indicate which enterprises have been profitable and which ones have not. The manager can use this information to make decisions concerning future enterprises. Therefore, it is necessary to use a record keeping system that will allow the manager to examine each enterprise separately.

Reasons for unprofitable enterprises - It is important for the manager to determine why a certain enterprise lost money. Was it because the market price was too low or was the cost of production too high? Was there enough demand for the product? Can the prices be raised enough to make it profitable and still maintain sales? Was the loss due to poor management procedures? After examining these questions, the manager will know whether the enterprise should be discontinued or not.

Effect of expanding or reducing enterprises - Just because an enterprise is doing well does not mean that it will do better if it were bigger. The manager must be sure there is enough demand to handle an increase in an enterprise before expanding that enterprise. If there is not enough demand, expanding a profitable enterprise may actually cause the manager to lose money.

If an enterprise is unprofitable, reducing it could actually reduce the costs enough to make it profitable. However, some enterprises may still lose money when they are reduced. These enterprises should be eliminated to help the business increase profit.

Debt load or repayment schedule restrictiveness - By looking at certain parts of the financial analysis, the manager can determine if the debt load of the business is too high. If it is, the manager should consider ways of reducing

the debt by restricting the business. If the repayment schedule is too restrictive, it will cause problems in the cash flow of the business.

Types of Financial Analysis

There are three basic types of financial analysis. A complete financial analysis should include all three types. The types are trend analysis, projected analysis, and comparative analysis.

Trend analysis - A trend analysis is used to measure trends within the business by comparing financial conditions from different points in time. A comparison of net worth statements on Jan. 1 of last year with Jan. 1 of this year would be an example of a trend analysis.

Projected analysis - Projected analyses are used to estimate future changes in net worth, which is the portion of the business the owner owns that is free of debt. It is based on a projected net worth and cash flow statements. Projected analyses can be used as a forward planning tool.

Because a projected analysis is used to predict future conditions, it is very important to use realistic estimates. Many successful managers use lower returns and higher costs on a projected analysis to provide a safety margin in case things go wrong.

Comparative analysis - A comparative analysis is used to compare the financial condition of one business with other businesses in the industry. Information used in a comparative analysis is generated by a trend analysis and a projected analysis of more than one business. This information is used to provide a benchmark for measuring progress.

Cash Flow

Most students in secondary agriculture have completed cash flow statements for the SOEP. Cash flow statements are a record of when income is received and when expenses are paid. They can also be used as a forward planning tool to show when borrowed funds are needed and when extra cash is available.

A cash flow statement can also be used to determine feasibility of business ventures. For example, if a manager sees that the business has extra cash on hand at the end of the month, he or she might decide to use that money for another enterprise. However, if the manager notices that there is extra money one month and not enough the next, he or she might try to adjust the business so the cash flow is more even from month to month.

Types of Tests in a Financial Analysis

Test of liquidity - Tests of liquidity can determine a firm's ability to meet its current financial obligations. These tests can also estimate the adequacy of the cash flow statement. The results of these tests can be used in a com-

parative analysis, trend analysis, and projected analysis to provide the manager with critical information about the current situation of the business, how the business is doing compared to other businesses, how the current condition compares with previous condition, and what the future is expected to hold.

Test of solvency - Tests of solvency can determine the firm's ability to meet long-term debt obligations. The results of these tests provide information for a comparative, trend, and projected analyses of solvency. Tests of solvency can also be used to determine the firm's ability to withstand a crisis situation.

Test of profitability - Tests of profitability can determine how profitable a business is. These tests measure the profitability of investments and sales. These tests are especially important because of the opportunity cost of money. If the business is not earning profits that are competitive with other businesses, investors are losing money. The results of profitability tests are used in comparative, trend, and projected analyses to compare profits from other times with the current profit, to compare profits with competing businesses, and to project future profits, respectively.

The different types of tests have been discussed; now the measures for each test will be addressed. A hypothetical corporation called XYZ Agribusiness Corporation will be used to illustrate the points being discussed. Financial information about the corporation is provided on page II-64 and II-65. Refer to the example when reviewing the different measures.

Measures in Tests of Liquidity

Current ratio - The current ratio, also called the working capital ratio, can be found by dividing current assets by current liabilities. Current assets include cash, accounts receivable (less bad debts), notes receivable, and inventory. Current liabilities include accounts payable, salaries payable, and interest payable. A current ratio of 2:1 indicates the business has $2.00 of current assets for each $1.00 of current liabilities. A 2:1 ratio may be considered ideal, but it is more important to compare current ratios of firms within an industry because acceptable ratios vary widely between different businesses.

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{\$\ 48,600}{\$\ 15,200} = 3.2:1$$

Acid-test ratio - The acid-test ratio is very similar to the current ratio except that it does not include the value of inventory. When a business is doing well or adequate, inventory is considered a buffer against any unexpected losses, such as bad debts. The acid-test ratio is determined by dividing current monetary assets by current liabilities. Current monetary assets include cash, accounts receivable (less bad debts), and notes receivable.

$$\frac{\text{Current Monetary Assets}}{\text{Current Liabilities}} = \frac{\$\ 18,600}{\$\ 15,200} = 1.22:1$$

Inventory to receivables ratio - The inventory to receivables ratio is determined by dividing the value of inventory by total receivables. Receivables include any money owed to the business. Cash on hand and inventory are not included in this measure. This measure indicates the firm's ability to profitably convert inventory into cash.

$$\frac{\text{Value of Inventory}}{\text{Total Receivables}} = \frac{\$\ 30,000}{\$\ 8,600} = 3.5:1$$

Measures in Tests of Solvency

Net worth to fixed assets ratio - The net worth to fixed assets ratio is determined by dividing the net worth of the business by the value of total fixed assets. Net worth is determined by subtracting total liabilities from total assets. Net worth represents the owner's equity in the business. Fixed assets include the value of land, buildings, and machinery. This ratio measures the percent of net worth in fixed assets. If this ratio is greater than 1:1, the amount over 1:1 represents the proportion of net worth in the working capital.

$$\frac{\text{Net Worth}}{\text{Fixed Assets}} = \frac{\$\ 85,600}{\$\ 75,600} = 1.1:1$$

Net worth to total debt ratio - The net worth to total debt ratio is determined by dividing the net worth by the total debt (liabilities). This ratio provides a measure of net worth as a percent of total debt. As a general rule, the higher the ratio, the better it is for the business.

$$\frac{\text{Net Worth}}{\text{Total Debts}} = \frac{\$\ 85,600}{\$\ 39,400} = 2.2:1$$

The net worth to total debt ratio provides an indication of the financial health of a business. This ratio, as a test of solvency, may be useful to assess how well the business may survive a crisis. A lower ratio means the business may be on rather shaky financial ground, whereas a higher ratio indicates the business is in a relatively stable position. Bankers will evaluate this and other solvency ratios to determine the risk of lending money to a business.

Measures in Tests of Profitability

Earnings to investments ratio - This ratio is determined by dividing net income by net worth. Net income is the amount of profit (or loss) remaining after all expenses and dividends have been paid. This ratio provides a measure of return on net worth and is extremely important to investors.

$$\frac{\text{Net Income}}{\text{Net Worth}} = \frac{\$\ 4,400}{\$\ 85,600} = .05:1$$

Earnings to sales ratio - This ratio is determined by dividing net income by net sales. The earnings to sales ratio is used to determine the profit margin

on sales. This ratio can be used to adjust prices based on previous conditions, to adjust profit margins of competitors, and to project future profit margins.

$$\frac{\text{Net Income}}{\text{Net Sales}} = \frac{\$\ 4,400}{\$\ 188,200} = .02:1$$

XYZ Agribusiness Corporation's earnings to sales ratio of .02:1 shows that for every dollar of sales, the corporation earned two cents profit.

Earnings to assets ratio - The earnings to assets ratio provides a measure of return on total investment including any borrowed money used for investment. It is determined by dividing net income by total assets. The earnings to assets ratio should exceed the opportunity cost of having money invested elsewhere.

$$\frac{\text{Net Income}}{\text{Assets}} = \frac{\$\ 4,400}{\$\ 125,000} = .04:1 \text{ or } 4\%$$

The corporation's earnings to assets ratio of .04:1 tells the manager that the corporation should not borrow money unless the interest rate is four percent or less. The corporation would be risking a loss if money were borrowed at an interest rate higher than four percent because the money would be expected to return only four percent in earnings.

Summary

A financial analysis measures the financial health of a business. It is conducted to provide information on credit needs, on profitability, and for tax management purposes. The results of a financial analysis can be used to determine growth or reduction areas or employment needs. There are three types of financial analysis: trend, projected, and comparative. Information for the financial analysis is generated through tests of liquidity, solvency, and profitability.

Credits

Duft, Kenneth D. Principles of Management in Agribusiness. 1st ed. Reston VA: Prentice Hall, 1979.

Farm Business Management Analysis. University of Missouri-Columbia: Instructional Materials Laboratory, 1984. Unit II.

Osborn, Donald D.; Kenneth C. Schneeberger. Modern Agricultural Management. 2nd ed. Reston, VA: Reston Publishing Co., Inc., 1983.

Steward, Jim; Raleigh Jobes. Farm and Ranch Business Management. Moline, IL: Deere and Company, 1985.

EXAMPLE 12.1 - XYZ Agribusiness Corporation

BALANCE SHEET as of 31 DECEMBER, 19__

ASSETS		
Current:		
Cash		$10,000
Accounts receivable	$7,600	
Less bad debts	- 1,400	
	6,200 -->	6,200
Notes receivable		2,400
Inventory 12/31		30,000
Total current		**$48,600**
Fixed:		
Land		$ 8,000
Buildings	$60,000	
Less depreciation	- 5,600	
	$54,400 -->	54,400
Machinery	17,600	
Less depreciation	- 4,400	
	$13,200 -->	13,200
Total fixed		**$75,600**
Other:		
Unexpired insurance		$ 600
Unused supplies		200
Total other		**800**
Total assets		**$ 125,000**

LIABILITIES	
Current:	
Accounts payable	$14,000
Accrued salaries payable	800
Accrued interest payable	400
Total current	**$15,200**
Other:	
Mortgage payable	24,200
Total other	**$24,200**
Total liabilities	**$39,400**
Net worth:	
Capital stock	$70,000
Retained earnings	15.600
Total net worth	**$85,600**
Total liabilities and net worth	**$125,000**

RETAINED EARNINGS SCHEDULED

Balance, January 1	$ 18,800
Add profits	+ 4,400
Total	23,200
Deduct dividends	- 7,600
Balance, December 31 Net worth	$ 15,600

EXAMPLE 12.1 - Continued

XYZ AGRIBUSINESS CORPORATION

Income Statement, Calendar Year

INCOME			
Gross sales		$ 94,500	
Returns and allowances (subtract)		- 400	
Net Sales		$188,200	$188,200
COST OF GOODS SOLD:			
Beginning inventory	$ 30,000		
Purchases	109,000		
Manufacturing	25,000		
Freight insurance	2,600		
Cost of goods available for sale	$166,600	$166,600	
Ending inventory (subtract)		- 30,000	
Total cost of goods sold		$136,600	- 136,600
Gross Income			$ 51,600
EXPENSES			
ADMINISTRATION AND GENERAL EXPENSES:			
Office supplies	$ 400		
Insurance	800		
Taxes	1,000		
Heat, light, water	3,600		
Bad debts	600		
Office salaries	11,400		
Misc. expenses	600		
Total Administrative Expense	$18,400	$18,400	
SELLING EXPENSES:			
Advertising	$ 5,800		
Sales salaries	17,800		
Delivery expense	2,000		
Misc. selling expenses	600		
Total Selling Expenses	$26,200	26,200	
Total Operating Expense		$44,600	- 44,600
Operating Income			$ 7,000
Interest paid (subtract)			- 800
Net Income before Taxes			$ 6,200
Federal income taxes (subtract)			- 1,800
Net Income			$ 4,400

Lesson 13: Effects of Income Tax on the Agricultural Business

Many agricultural business managers have found that time spent studying tax laws during slow periods of the year may be the most valuable time spent all year. Good tax management strategies may be one of the biggest determiners of how much after-tax income is left in the business.

Goal of Tax Management

The primary goal of tax management is to maximize after-tax income. To reach this goal, the manager must determine taxable income. Taxable income can be determined by using the formula in Figure 13.1.

FIGURE 13.1 - Taxable Income Formula

Gross income (total amount income)
- Exclusion (income not subject to tax)
- Deductions (business expenses, depreciation, and home mortgage interest)
- Exemptions (deductions for self and dependents)

Adjusted gross income
- Taxes due

After-tax income

EXAMPLE: Angela had $40,000 in gross farm income. She had $500 interest income on municipal bonds, which is considered an exclusion from taxable income to encourage investment in municipal bonds. She also has $15,000 in business deductions. She is married and has two children, so she can count four personal exemptions at $1,900 each. Note that rules concerning the amount included in exclusions, deductions, and exemptions may change with changes in tax laws. What is Angela's after-tax income?

Gross income	$40,000
- Exclusion	- 500
	39,500
- Deductions	- 15,000
	24,500
- Exemptions	- 7,600
Adjusted gross income	$16,900
- Taxes due according to 1987 tax table	2,415
After-tax income	$14,485

Angela is able to determine after-tax income under current conditions. Now she will try to determine how she can increase her after-tax income. This does not necessarily mean to pay the lowest amount possible in taxes.

If the goal was to pay no income tax, the business would either have to make very little money or have an enormous amount of deductions to offset any taxes. Having a large amount of deductible expenses may lower taxes significantly, but the business may not be able to afford the extra expenses. This is especially true in agricultural businesses that may have a profitable year one year and operate at a loss the next year.

Methods to Maximize After-Tax Income

There are three basic methods used to maximize after-tax income. They are maintaining complete and accurate records of deductions, maintaining a constant level of income, and postponing income. These methods form the basis of tax management. These methods can be and are often used together.

Maintaining complete and accurate records of deductions - The manager should maintain complete and accurate records of all possible deductions that can be used to lower taxable income. All businesses encounter expenses that can be used to help lower the amount of taxes paid. Without a good record keeping system, it is difficult to keep track of all expenses encountered during the year. This could result in paying significantly higher taxes than are necessary.

A business may keep good records of the major expenses and deductions, but still miss many additional smaller deductions. When all additional deductions are added together, a substantial amount of money may result. One way to avoid missing these deductions is to develop a check list to supplement the record keeping system. This will help insure that these additional deductions are not overlooked. A list of often overlooked tax-deductible items is given below. Depending on the situation, this list may contain more or fewer items.

1. Dues to agricultural organizations
2. Costs of agricultural magazines and other references and business material
3. Farm share of utility bills including phone, electricity, and office heat
4. Wages to children and giving children livestock or crops
5. Mileage on family car (See Farmer's Tax Guide.)
6. Cost of child care (with limitations)
7. Retirement plan set up with professional advice
8. Mortgage and business interest

When in doubt about deductible items, it is advisable to consult an accountant. They are trained professionals in the area of taxes. Accountants are also useful in establishing and maintaining a good record keeping system. If taxes remain high after deducting these items, consider alternative forms of business organization such as a partnership or corporation.

Maintaining a constant level of income - Maintaining a constant level of income is a very effective way of increasing after-tax income. If a business has an extremely profitable year, the extra income may be taxed at a higher rate. When the same business has a very poor year, it may not be able to use

deductions if the deductions exceed the income. By maintaining an even flow of income, the business can avoid being taxed in a higher tax bracket during very profitable years and losing deductions in less profitable years.

Maintaining an even level of income may be difficult for farmers to do. Farmers may have some very profitable years and may barely break even in others. Consider the example in Table 13.1 of a married couple with two children. Over a three-year period they had income totaling $60,000. With Option 1 income is evened out, but with Option 2 it is not. Notice the difference in taxes paid. Which option would you prefer?

TABLE 13.1 - Federal Income Tax Paid

	OPTION 1		OPTION 2	
	Income	Taxes Paid	Income	Taxes Paid
Year 1	$ 20,000	$ 1,437	$ 40,000	$ 6,614
Year 2	20,000	1,437	20,000	1,437
Year 3	20,000	1,437	0	0
Total	$ 60,000	$ 4,311	$ 60,000	$ 7,051

Postponing income - The third method of maximizing after-tax income is to postpone income to the next year. This method is often used when a business has had a good year, and the manager realizes the business will have to pay a large amount in taxes. If some of the income can be shifted into the next year, it won't be included in the current year's taxable income. One common way to postpone income is to sign a contract to sell a product or provide a service before the end of the year but not take payment until after the first of the next year.

Categorizing Income

There are three ways to categorize income for tax purposes. It can be categorized as ordinary, capital, or non-taxable income. The way income is categorized may have a significant impact on how it is taxed. A good record-keeping system will list these types separately.

Ordinary income - Ordinary income is income earned from sources such as wages, tips, and salaries. This is how most employee income is classified. All ordinary income is subject to tax rules established by the Internal Revenue Service (IRS).

Capital gains income - Capital gains income is income from the sale of capital assets above the original purchase price. A common example is stock. Suppose a manager purchases stock at $20 per share. Later those shares are sold for $25 dollars each. The manager has made a capital gain of $5 per share. Tax is paid only on the $5. It is important to separate capital gains income because it is not subject to social security tax.

Non-taxable income - Certain types of income are classified as non-taxable to the person receiving the income. Non-taxable items include gifts; increases

in value of capital assets, such as land before it is sold; interest on municipal bonds; and the value of a home provided as a fringe benefit. A portion of social security benefits are non-taxable. Inheritance of property is non-taxable, but any income earned later from the inheritance is taxable.

Rules for these items change periodically. A more complete discussion can be found in a current issue of the Farmer's Tax Guide.

Categorizing Expenses

One must be able to categorize expenses. The way they are categorized may have a big impact on the amount of taxes due.

Deductible - There are two types of deductible expenses used by agricultural businesses. Certain expenses are deductible when purchased. These are business expenses incurred on a day-to-day basis. The expense of other items is deductible when they are sold. This would include items the business will buy, change in some way, and re-sell. An example of this is feeder cattle. The feed for the cattle is deductible when it is purchased. The feeder cattle were purchased for re-sale at a later date; therefore, the purchase cost of the cattle is deducted when they are sold.

Non-deductible - Non-deductible expenses cannot be used to lower taxable income. Non-deductible expenses include housing, personal transportation, food, clothing, recreation, and education. These expenses are often called family living expenses.

Capital - Capital expenses are treated much differently. There are two types of capital expenses: depreciable and capitalized.

Depreciable items are items that the business needs in order to operate. Unlike deductible expenses, depreciable items may last several years. As a result, tax laws allow a business to deduct the purchase cost over a number of years instead of the year purchased. Depreciation will be discussed fully in the next lesson.

Capitalized items are unique. The cost of these items cannot be deducted or depreciated. The only way to recover the cost of a capitalized item is to sell the item. Land and homes are the two main examples of capitalized items. The tax laws treat capitalized items this way because these items are expected to increase in value over time.

Reducing Taxable Income

The list below gives methods to reduce taxable income. These methods are used when one expects to otherwise pay a large amount in taxes.

1. Postpone sales to next year.
2. Use deferred sales contract, which allows delivery of item sold but delays income until the next year.

3. Make advance payments for items such as feed, fertilizer, and fuel. This allows some of next year's expenses to be deducted this year.
4. Purchase needed equipment and machinery before the end of the year to utilize depreciation.
5. Use expensing to allow an additional deduction from the basis of depreciable items in the year purchased.
6. Use accelerated depreciation to increase the amount of depreciation.
7. Contribute to an Individual Retirement Account (IRA) to lower taxable income.

Increasing Taxable Income

Some years it may be profitable to increase taxable income. This is done so that deductions and personal exemptions are not lost. For example, Frank has $8,000 in deductions and personal exemptions, but only has $6,000 in income. In this case, $2,000 of the deductions would not be used. Frank could increase his income by $2,000 without paying any income tax. The list below gives some methods for raising taxable income.

1. Increase sales in current year.
2. Postpone expenses and investments until after Jan. 1.
3. Pay bills after Jan. 1.
4. Do not use expensing.
5. Use straight-line depreciation
6. Get a supplemental income such as off-farm labor or custom work.
7. Withdraw money from an IRA.

By increasing and decreasing taxable income when appropriate, income can be evened out effectively. Over a period of years, this should result in maximizing after-tax income.

Summary

The goal of tax management is to increase after-tax income. Tax management strategies may be one of the most profitable ways of reaching this goal. Occasionally income will need to be increased or decreased in an attempt to have an even level of income. This will result in the lowest taxes in the long run. It is also important to be able to categorize income and expenses because the different categories can have a significant impact on taxes.

Credits

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Lesson 14: Calculating Depreciation for Tax Purposes

The previous lesson involved a discussion on tax management. One of the primary tax management tools for agricultural managers is the effective use of depreciation. Laws concerning depreciation are made by Congress. These laws are periodically changed or revised. Therefore, it is very important for the agricultural business manager to stay current with the changes.

Types of Depreciation

There are two types of depreciation. The manager should be familiar with each type because each is important to the business at different times.

Economic depreciation - Economic depreciation is an allowance for actual wear and tear or obsolescence of tangible property such as buildings, machinery, equipment, and livestock. Economic depreciation represents the current fair market value of an item.

Tax depreciation - Tax depreciation is a system for deducting the cost and recapturing the expense of purchasing tangible property based on book values. It does not necessarily follow economic depreciation. Tax depreciation is based on methods established by the government. It is designed to allow a business to recover the cost of purchasing a depreciable item more quickly. This quicker recovery creates a tax incentive for a business to purchase depreciable items.

Basis

Basis is the value of an item that can be depreciated. It is the book value of trade-in property plus the cash difference paid. If there is no trade-in, it is just the cost of the new or used property. Basis on property already owned is the remaining undepreciated value, or book value, of the property. Basis is not the list or replacement cost. Basis provides the starting point to determine tax depreciation.

EXAMPLE 14.1: A business purchases a pickup for $10,000. The business trades in an old pickup with an undepreciated value of $1,000 and pays $9,000 cash difference, making the basis $10,000 ($1,000 + $9,000). If this pickup is strictly for business use, the $10,000 pickup can be depreciated using tax depreciation. If the pickup is used partially for business and partially for personal use, the percent of time used for business is multiplied by the basis to determine the amount that can be used for depreciation.

Expensing

Expensing is an option that allows the manager to deduct up to $10,000 per year from the basis of capital items to be used in the business. This deduction is counted as a business expense in the year purchased; therefore, it lowers the business's taxable income by the amount expensed. The $10,000 limit can be applied to one item or a combination of items. The full $10,000 does not have to be used. Expensing provides an important tax management tool in years of unusually high income. There are some limitations to expensing.

1. Up to $10,000 per year on capital items purchased that year can be expensed.
2. Amount expensed cannot be depreciated. Basis is lowered by amount expensed.
3. One can only expense cash difference paid.
4. Expensing cannot be used to create a loss.

The remaining amount that is not expensed falls under the regular rules for depreciation. The manager can expense up to the limit and claim depreciation on the same item during one year. This can be used to create a larger first year deduction.

ACRS vs. MACRS

Most items currently being depreciated will fall into one of two tax categories: ACRS or MACRS. These categories look similar, but there are three important differences. Time is the first difference. ACRS, or Accelerated Cost Recovery System, is used for items purchased after 1980 and before 1987, and MACRS, or Modified Accelerated Cost Recovery System, is used for items purchased in 1987 and after.

The second difference is property classes. Property classes have been reassigned. A thorough discussion of property classes is presented later in the lesson. The last major difference is in calculating depreciation. When determining depreciation with the ACRS, the original basis is multiplied by a percentage set for each year of the property class. MACRS uses a declining balance formula to calculate depreciation based on the remaining book value of an item. Both ACRS and MACRS include an optional method which utilizes straight-line depreciation.

The change from ACRS to MACRS was caused by the Tax Reform Act of 1986. Congress periodically reviews and revises the tax laws in an effort to help stabilize the economy. However, once the fundamental concepts of depreciation are understood, it is usually not too difficult to adjust to the periodic changes caused by Congress.

Congress establishes the depreciation methods allowed and determines how property is classified. Some items wear out more quickly than others. Property classes and depreciation methods are tied together and are designed to help a business depreciate these items more quickly. Other items, such as buildings, last much longer. As a result, the depreciation method is much slower.

ACRS Depreciation and Property Classification

Under ACRS, property is divided into four property class categories: three-year property, five-year property, 10-year property, and 15-year property. The 15-year property category, however, was changed by Congress to an 18-year property class for items purchased after March 15, 1984. Congress further changed the category to a 19-year property class for items purchased after May 8, 1985. Items purchased before March 15, 1984, still use a 15-year plan.

Three-year property includes cars, light trucks, and swine. Five-year property includes machinery, equipment, sheep, single-purpose livestock buildings, grain bins, fences, and cattle. Ten-year property includes orchards and mobile homes. Fifteen-year property includes rental properties, commercial buildings, land improvements, and farm buildings. Eighteen- and 19-year property includes the same things as 15-year property. To figure depreciation under ACRS, multiply the original basis of the item by the appropriate percentage from the ACRS table. Table 14.1 shows the percentage of the basis that should be depreciated for three-, five-, and 10-year property classes.

TABLE 14.1 - ACRS Table

	Applicable percentage for the property class		
Recovery year	Three-year	Five-year	10-year
1	25	15	8
2	38	22	14
3	37	21	12
4		21	10
5		21	10
6			10
7			9
8			9
9			9
10			9

EXAMPLE 14.2: Billy bought $3,000 worth of beef cattle in 1985. Cattle are in the five-year category. Billy can determine the annual depreciation on the cattle by multiplying the original $3,000 basis of the cattle by the appropriate percentages in Table 14.1. Table 14.2 shows the annual depreciation. After Billy has owned the cattle five years, the entire amount of the original basis will have been depreciated.

TABLE 14.2

Year	Percentage Depreciated	Amount Depreciated
1985	15	$450
1986	22	660
1987	21	630
1988	21	630
1989	21	630
	100	$3,000

MACRS Property Classification

MACRS divides depreciable property into eight classes: 3-, 5-, 7-, 10-, 15-, 20-, 27½-, or 31½-year property.

Three-year property includes over-the-road tractors and breeding swine.

Five-year property includes cars, pickups, vans, breeding or dairy cattle, breeding sheep, computers, typewriters, and all trucks except over-the-road tractors.

Seven-year property class includes most machinery and equipment, greenhouses, silos, grain bins, fences, and single-purpose agricultural structure. A single-purpose agricultural structure is one which has no other practical purpose other than what it was designed for. Examples include milking parlors and brooder houses.

Ten-year property class includes ships, tugboats, and barges.

Fifteen-year property includes orchards, vineyards, manufactured homes, paved lots, and drainage tile.

Twenty-year property includes multipurpose farm buildings such as barns or livestock loafing sheds.

Twenty-seven and a half-year property includes residential rental property.

Thirty-one and a half-year property includes commercial business property such as office buildings, motels, and retail stores.

MACRS Conventions

Under the Modified Accelerated Cost Recovery System one of the following conventions is used. The manager needs to determine which convention applies. The conventions apply to the first year of ownership. The amount depreciated the first year will affect the amount depreciated the last year.

Midmonth convention - The midmonth convention is only used for 27½- and 31½-year property. This convention treats all 27½- and 31½-year property as being purchased or sold in the middle of the month. For example, a rental house purchased in March will receive 9½ months of depreciation during the first year and 2½ months of depreciation the last year.

Midquarter convention - The midquarter convention applies when 40 percent or more of the basis of three- to 20-year property purchased in the tax year is bought in the last quarter. The last quarter is the last three months of the year.

EXAMPLE 14.3: Sam purchased $2,000 worth of breeding heifers on March 1 and purchased a $5,000 used pickup on November 1. Determine if the midquarter convention applies.

1. Determine in what quarter each was purchased. The heifers were purchased in the first quarter, and the pickup was purchased in the last quarter.
2. Calculate total basis for the year.
   $2,000 + $5,000 = $7,000
3. Calculate 40 percent of the total basis.
   $7,000 x .40 = $2,800
4. Since the basis for the last quarter exceeds 40 percent of the total basis ($5,000 > $2,800), determine first-year depreciation for each item purchased and multiply by quarter purchased. The heifers were purchased at midpoint of the first quarter, leaving seven-eighths of the year for depreciation. The pickup was purchased at midpoint of the fourth quarter, leaving one-eighth of the year for depreciation.

Midyear convention - The midyear convention applies to the purchase of 3-, 5-, 7-, 10-, 15-, and 20-year property, if the midquarter convention does not apply. The midyear convention applies on the sale of property. All property put into service during the year is treated as if it were purchased at the midpoint of the year. For example, if the only depreciable purchase was in March, the item will receive one-half year of depreciation the first year.

Three Choices for MACRS Depreciation

The manager needs to decide how to depreciate the property. The three choices that a manager has are regular MACRS, optional straight-line, or alternative MACRS. All items within a property classification purchased during the same year must be depreciated using the same choice except 27½ and 31½ year property.

Regular MACRS

Under regular MACRS there are three methods for calculating depreciation. The first method, 200 percent declining balance, applies to 3-, 5-, 7-, and 10-year property. The appropriate convention is applied the first year. The switch-over provision is applied when appropriate. The basic formula for 200 percent declining balance method is:

$$\frac{\text{200 percent}}{\text{property class}} \times \text{undepreciated value} = \text{annual depreciation}$$

For a $5,000 used pickup (five-year property) the formula for the first year depreciation is as follows:

$$\frac{200\%}{5} \times \$5{,}000 \times \text{appropriate convention} = \text{first year depreciation}$$

The second method, 150 percent declining balance, applies to 15- and 20-year property. The appropriate convention is applied the first year. The switch-over provision is applied when appropriate. The basic formula is:

$$\frac{\text{150 percent}}{\text{property class}} \times \text{undepreciated value} = \text{annual depreciation}$$

For a $3,000 machine shed (20-year property) the formula for the first year depreciation is:

$$\frac{150\%}{20} \times \$3{,}000 \times \text{appropriate convention} = \text{first year convention}$$

Straight-line depreciation is the third method. It applies to 27½- and 31½-year property. The midmonth convention applies. The switch-over provision does <u>not</u> apply, because this method is straight-line. The basic formula is:

$$\frac{\text{basis}}{\text{property class}} = \text{annual depreciation}$$

For a $40,000 rental house (27½-year property) the formula for the first year depreciation is:

$$\frac{\$40{,}000}{27\frac{1}{2}} \times \text{midmonth convention} = \text{first year depreciation}$$

The declining-balance methods calculate depreciation as a fraction of each year's remaining balance. To recapture the full amount of depreciation, it is necessary to switch-over to the straight-line comparison method of depreciation during the last part of the recovery period. One should calculate depreciation using both the declining-balance method and the straight-line comparison method.

The straight-line comparison method uses the remaining basis of the declining balance method and the remaining years in the regular straight-line formula. In this way, the straight-line comparison method shows when to make the switch-over to the regular straight-line method. The switch-over should occur when the amount calculated under the straight-line comparison method exceeds the amount calculated using the declining-balance method.

The first-year depreciation is reduced according to which convention is used. Because a full year's depreciation is not allowed during the first year of ownership, Congress has ruled that the remaining amount be depreciated after the last year of the property class.

Study Example 14.4. In this example, when the first five years of the accelerated method are added to the last three years of the straight-line comparison method, the total is equal to the original basis. Other problems involving the switch-over to straight-line are calculated using the same steps.

EXAMPLE 14.4: Jack purchased a grain bin for $14,000 on February 5. He chooses to use regular MACRS. The midyear convention applies. The grain bin is in the 7-year property class.

Year	200% Declining-balance	Use	Straight-line Comparison
1	200% ÷ 7 = .29 .29 x $14,000.00 = $4,060.00 $4,060.00 x ½ = $2,030.00	<--	($14,000.00 ÷ 7.5) x ½ = $933.33
2	200% ÷ 7 = .29 .29 x ($14,000.00 - $2,030.00) = $3,471.30	<--	$11,970.00 ÷ 6.5 = $1,841.54
3	200% ÷ 7 = .29 .29 x ($11,970.00 - $3,471.30) = $2,464.62	<--	$8,498.70 ÷ 5.5 = $1,545.22
4	200% ÷ 7 = .29 .29 x ($8,498.70 - $2,464.62) = $1,749.88	<--	$6,034.08 ÷ 4.5 = $1,340.91
5	200% ÷ 7 = .29 .29 x ($6,034.08 - $1,749.88) = $1,242.42	<--	$4,284.20 ÷ 3.5 = $1,224.06
6	* 200% ÷ 7 = .29 .29 x ($4,284.20 - $1,242.42) = $882.12	-->	$3,041.78 ÷ 2.5 = $1,216.71
7	200% ÷ 7 = .29 .29 x ($3,041.78 - $882.12) = $626.30	-->	$1,825.07 ÷ 1.5 = $1,216.71
8	200% ÷ 7 = .29 .29 x ($2,159.66 - $626.30) = $444.67	-->	$ 2,030.00 3,471.30 2,464.62 1,749.88 1,242.42 1,216.71 1,216.71 $13,391.64 $14,000.00 13,391.64 $ 608.36 $608.36 depreciation for year eight

*Switch to straight-line method.

Optional Straight-line

Optional straight-line is exactly what it says. It is an option to use straight-line depreciation instead of 200 percent or 150 percent declining balance methods on 3- through 20-year property. The property classes are the

same as under regular MACRS. The appropriate convention is applied the first year. Once an item is depreciated using straight-line depreciation, it must continue on straight-line. The basic formula is:

$$\frac{\text{basis}}{\text{property class}} = \text{annual depreciation}$$

EXAMPLE 14.5: Jack chooses to use optional straight-line depreciation instead of regular MACRS for the grain bin discussed in Example 14.4.

1. Calculate annual depreciation. This amount will be depreciated in years two through seven.
   $14,000 ÷ 7 = $2,000
2. Calculate depreciation for the first year using the midyear convention.
   ($14,000 ÷ 7) x ½ = $1,000
3. Determine the amount to be depreciated the last year. This amount can be figured two ways.
   a. One-half of the annual depreciation was depreciated the first year; therefore, the remaining half ($1,000) is depreciated the last year, year eight.
   b. Determine the amount that has been depreciated in years one through seven. The remaining amount is depreciated in year eight.

year 1	$ 1,000		
year 2	2,000		
year 3	2,000		
year 4	2,000		
year 5	2,000		
year 6	2,000	$14,000	
year 7	+ 2,000	- 13,000	
	$ 13,000	$ 1,000	depreciation for year eight

Alternative MACRS

It is an alternative for depreciating all property classes. Alternative MACRS may have a longer recovery period than regular MACRS. The annual depreciation is calculated using the following straight-line formula: basis ÷ alternative MACRS years. The first year depreciation is calculated using rules that apply to midyear, midquarter, or midmonth conventions. Table 14.3 gives the recovery periods for ACRS, regular MACRS, and alternative MACRS for various assets.

EXAMPLE 14.6: Tom purchased a greenhouse in November for $12,000. This was the only depreciable purchase that he made. He chooses to depreciate the greenhouse using the alternative MACRS method. The midquarter convention applies.

1. Determine the property class for a greenhouse under alternative MACRS. It is 15 years.
2. Calculate annual depreciation. This will be depreciated in years two through 15.
   Basis ÷ alternative MACRS years = annual depreciation.

$12,000 ÷ 15 = $800

3. Calculate depreciation for the first year using the midquarter convention.

    ($12,000 ÷ 15) x 1/8 = $100

4. Determine the amount to be depreciated the last year. There are two ways of figuring the amount of depreciation for the last year.

    a. One-eighth of the annual depreciation was deducted in the first year; therefore, the remaining seven-eighths will be deducted in the last year, year 16.

        ($12,000 ÷ 15) x 7/8 = $700

    b. Determine the amount that has been depreciated in years one through 15. The remaining amount is depreciated in year 16.

year 1	$ 100		
year 2	800		
year 3	800		
year 4	800		
year 5	800		
year 6	800		
year 7	800		
year 8	800		
year 9	800		
year 10	800		
year 11	800		
year 12	800		
year 13	800		
year 14	800	$12,000	
year 15	+ 800	- 11,300	
	$11,300	$ 700	depreciation for year 16

EXAMPLE 14.7: In this example, Jack chooses to use alternative MACRS for his combine.

1. Determine the recovery period for a grain bin under alternative MACRS. It is 10 years.
2. Calculate the annual depreciation. This will be depreciated in years two through 10.

    $14,000 ÷ 10 = $1,400

3. Calculate the first year depreciation.

    ($14,000 ÷ 10) x ½ = $700

4. Calculate the depreciation for year 11. One half of the annual depreciation was deducted the first year; therefore, the remaining half ($700) will be deducted the last year.

Using Depreciation for Maximum Advantage

It is important to know when to use regular MACRS, optional straight-line, or alternative MACRS depreciation. Keeping accurate records will make it easier to decide. An accelerated method should be used if the business owes tax. A straight-line method should be used in years of low taxes to save deductions for future years. Remember, once an item is started on straight-line, it must continue on straight-line depreciation.

Table 14.4 shows the amount of depreciation that Jack could take for the grain bin for regular MACRS, optional straight-line, and alternative MACRS. Jack should determine which choice will maximize his tax advantage.

TABLE 14.4

YEAR	REGULAR MACRS	OPTIONAL STRAIGHT-LINE	ALTERNATIVE MACRS
1	$ 2,030.00	$ 1,000.00	$ 700.00
2	3,471.30	2,000.00	1,400.00
3	2,464.62	2,000.00	1,400.00
4	1,749.88	2,000.00	1,400.00
5	1,242.42	2,000.00	1,400.00
6	1,216.71	2,000.00	1,400.00
7	1,216.71	2,000.00	1,400.00
8	608.36	1,000.00	1,400.00
9	-----	-----	1,400.00
10	-----	-----	1,400.00
11	-----	-----	700.00
TOTAL	$ 14,000.00	$ 14,000.00	$ 14,000.00

Summary

There are two types of depreciation: economic depreciation and tax depreciation. Tax depreciation is a very useful tool in income tax management. The Tax Reform Act of 1986 created the Modified Accelerated Cost Recovery System, which is used to calculate depreciation on property purchased after 1986. The manager must choose to use expensing or not and decide whether to use regular MACRS, optional straight-line, or alternative MACRS.

Basis provides the first step in determining depreciation. It must be determined if expensing, depreciation, or both are going to be used. The type of item will determine the property class and the depreciation method used. The time of year in which the item is purchased may affect which convention is used to calculate the first year depreciation. All items depreciated using a declining-balance method must switch-over to straight-line depreciation when the amount that could be claimed using straight-line depreciation exceeds the amount calculated using the declining-balance method.

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Lesson 15: Managing Risk

People in agricultural businesses face many uncertainties. Factors such as weather, supply, demand, government regulations, and foreign trade create a high level of uncertainty about future conditions. One goal of the manager is to reduce that uncertainty. This is called risk management.

Reducing Risk

The key to risk management is to reduce the risk to an acceptable level. This level will vary from individual to individual based on debt loads, assets, and individual preferences. There are five principal methods of reducing risk discussed in this lesson. They are listed below.

1. Insurance
2. Diversification
3. Price protection
4. Production contracting
5. Rental or leasing agreements

A discussion of each one of these methods is included in the following paragraphs.

Insurance

Insurance companies charge individuals and businesses for accepting their risks. Individuals or businesses who buy insurance are called policyholders. Insurance payments are called premiums. With insurance, many different policyholders pay premiums into a fund. The insurance company invests the fund to earn money.

Whenever an individual policyholder has a loss that is covered by the insurance policy, the policyholder files a claim with the insurance company. The insurance company pays the claim from the fund. In effect, people are paying a small regular price to avoid the risk of a much higher price later. It is usually good risk management to insure against major losses that are covered by the insurance company.

Without insurance, few people could afford the risk of fire, accidents, lawsuits, or the death of a family member. Insurance allows people to protect themselves from potential losses. Insurance can be used to protect others who might be injured or suffer a loss from one's own actions, such as hitting someone else's car. Insurance can also be used to allow one to take certain risks that he or she would otherwise not take. For example, one might borrow a large amount of money for a home or business and protect his or her family by having life insurance to cover the debt.

Diversification

Diversification is business involvement in more than one enterprise. It provides optional methods of income. The principle behind diversification is that various markets will have different price cycles. Thus, an agricultural business can avoid a big loss in one area by having income from another. This tends to make income more even. Even income is desirable from both a risk and a tax management standpoint. One disadvantage is that occasionally one will miss the full effect of peak market conditions for one enterprise because resources are not all concentrated in that area.

Diversification does not mean a having little of everything and not much of anything. Instead, an individual or business should have one main source of income that should be equal to about 40 to 60 percent of total income. This will help insure a more effective use of time than being more diversified. The whole goal of diversification is to minimize risk to an acceptable level.

Price Protection Strategies

Some of the biggest uncertainties for agricultural businesses include the price of raw materials and the selling price of products. As a result, price strategies have been developed. These strategies include forward contracting, hedging, and options. Forward contracting and hedging have been used by many agricultural managers and producers for a number of years. The use of options is relatively new and is increasing in popularity.

Forward contracting - Forward contracting is designed to reduce marketing uncertainty for buyers as well as producers. It is most beneficial during periods of great market unpredictability. With a forward contract, a buyer and a seller agree several months in advance to make a future transaction of a specific quantity and quality of a commodity for a certain price.

A wheat farmer may contract with an elevator to sell a specific amount of wheat to the elevator at a specific price even before the wheat is planted. The price and amount the two agree on is set, and no matter how prices and market conditions change, the conditions of the contract must be followed.

If the price of wheat rises drastically, the farmer must still deliver the wheat and cannot get the extra money per bushel that other farmers will be getting for their wheat. However, if the price of wheat drops drastically, the farmer will still get the higher contract price.

Usually managers do not commit the full amount of their product with a forward contract unless they already have the product. For example, producers would not want to contract the full amount they expect to produce in the early part of the year because the weather may cause them to have lower yields than expected.

Hedging - Hedging is a pricing strategy that uses forward pricing through futures market transactions. Managers or producers can use hedging to help insure a more even income in the face of unpredictable market prices.

If a producer fears a fall in prices for his or her product, that producer can use hedging to lock in a price for the commodity.

The producer will sell his or her product on the futures market. This is usually a long distance sale, and the producer never intends actually to deliver the product. Instead, the producer signs a contract to deliver the product but buys the same amount of product back on the futures market before the contract delivery date. These transactions usually involve no actual transfer of products but are simply done on paper.

If prices did fall as the producer had anticipated, the producer will have made a profit on the futures market by selling at a high price and buying at a low price. When the producer is ready to make an actual sale of his or her product, the low price he or she gets for the product is cushioned by the profit the producer has already made on the futures market transaction.

Options - Options can provide managers and producers with a unique risk management alternative. Options can be used to limit losses due to an unexpected price change, but unlike hedging or forward contracting, the manager or producer has the option of whether to buy or sell a futures contract at a given price.

There are two types of options: the call option and the put option. A call option is used by buyers to protect against rising prices, and a put option is used by sellers to protect against falling prices.

The strike price is the price at which the owner of an option may exercise the right to buy or sell the futures contract of a given commodity. Options are only good for a limited amount of time. The expiration of the option is usually at least 10 business days before the contract delivery date. If the option is not used by that date, the owner loses the right to buy or sell at the strike price.

If a producer decides to use an option, he or she pays a broker for a put option which insures the producer a certain minimum price, which is the strike price for his or her product. The producer can opt to sell at the strike price anytime between the purchase of the option and the expiration date of the option, or the producer can sell at the price the product will bring on the market.

If the price on the market is higher than the strike price, the producer can sell for that price. But if the market price is lower than the strike price, the producer will stay with the strike price. Whatever choice the producer makes, the broker is still paid to guarantee the strike price.

A feed mill manager may decide to purchase a call option on corn if he or she anticipates a rise in the price. If the price of corn does rise, the manager can purchase the corn at the strike price. If the market price of corn drops, the manager can take the market price, and all he or she has lost is the cost of purchasing the option.

Production Contracting

Production contracts can be used to eliminate many of the risks in an agricultural business. In a production contract, a producer contracts with a purchaser to raise a certain quantity and quality of a product. Unlike forward contracting, in production contracting the buyer will usually furnish some of the production inputs such as buildings and equipment.

The producer can avoid price risk with a production contract because he or she is paid a set wage for each unit produced. This payment is done on a schedule, so the producer is assured of a more even flow of income. With the payment schedule of a production contract, the producer is guaranteed by the buyer that he or she will be paid a set price on certain dates. For example, a strawberry producer can be guaranteed a certain price to be paid at the end of each week in May and June for his or her strawberries.

Production contracts are primarily used with vertically integrated firms. Vertical integration means that the firm controls more than one stage of production. A vertical firm will contract with a producer, share the production costs and risks, and pay the producer a piece wage. By using this production contract, the firm has more control over the production phase of the final product. The firm also processes and sells the product to consumers. Production contracts are common in poultry production and fruit and vegetable production.

Rental or Leasing Agreements

Nearly all agricultural businesses require a large amount of machinery and equipment. Machinery and equipment costs are often the largest investment the business will make. Because of the size of this investment, one must be aware of the risk involved.

Risk of obsolescence - Renting or leasing equipment transfers the risk of obsolescence to the owner. This is important in industries that have rapidly changing technologies. One example is the computer industry. Many businesses lease their computer equipment because the computer industry changes rapidly. By leasing the equipment, the business can insure staying current with the latest advances in technology.

Risk of high replacement costs - Machines and equipment can be expensive. Some firms cannot afford the high replacement cost of new items. Instead, these firms will lease what they need and buy certain machinery and equipment as the money becomes available. This lease transfers the risk of high replacement costs to the owner of the leased equipment.

Risk of high maintenance and repair costs - Renting or leasing can also be used to reduce risks by transferring high maintenance and repair costs to the lessor. Often the lessor will include service on leased machinery or equipment.

Summary

Risk management is one of the most important areas facing the agricultural business manager. The key to risk management is to reduce the risk to an acceptable level. This level will vary between businesses, managers, and economic conditions. Risk can be reduced by utilizing several tools such as insurance, diversification, price protection, production contracting, and rental or leasing agreements.

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Lesson 16: Insurance Needs of an Agricultural Business

Insurance is one of the primary tools in risk management. By paying relatively small regular premiums to an insurance company, one can protect against a much larger financial loss. Such losses can be devastating without adequate insurance coverage. Before discussing insurance it is important to have an understanding of key insurance terms.

> Insurance - Insurance is protection against major financial losses. An individual or company pays the insurance company premiums to cover major financial losses. If a covered loss occurs, the insurance company would pay for the loss.
> Policy - A policy is a written agreement between an insurance company and an insured person or company.
> Premium - The amount of money paid by the insured is called a premium. This payment can be paid monthly, semiannually, or annually.
> Claim - A claim is a request for payment of a loss.
> Insurance agent - An agent represents an insurance company and sells various types of insurance policies.

Insurance is not meant to enhance, but to compensate for actual losses. For example, if Bill demolished his four-year-old pickup, the insurance company would pay to replace that pickup with another vehicle of the same value, not a brand new pickup. Part of the responsibility of a manager of an agricultural business is to determine what type of insurance to obtain and what level of coverage is adequate. To accomplish this task, there are a number of things to consider.

Uses of Insurance

There are three basic reasons for being insured. First, insurance can be used for financial protection from unexpected economic loss. This loss could include fire or wind damage to buildings, machinery, or equipment. It could also provide protection from hailstorms, flood, or thefts. Businesses can even insure the life or health of a key employee. This insurance protects a business from financial loss created if the key employee were not able to work.

Insurance can also be used to meet the obligation to others who are injured or suffer a loss due to one's actions. This could include a person who is injured due to unsafe steps, a patch of ice, or other unsafe conditions on one's property or business. Instead of the property owner or business paying a large "out of pocket" sum for the injury, regular liability premiums are paid to an insurance company, and the company will pay for such injuries.

The third reason for securing insurance is because it can be used for financial protection when making a major purchase. In this way, the insurance can be used as collateral to guarantee the loan if the purchaser dies or

becomes disabled before the loan is paid in full. Using insurance in this way provides a major source of protection for families upon the death or disability of a wage earner. Without such insurance, the family may be forced to sell the item the loan was used to buy and use the proceeds to pay the loan. The item could even be repossessed. Many lenders will require the borrower to have such insurance.

Points to Consider When Purchasing Insurance

If there is a reasonable chance that a loss will occur, one should protect against the loss with adequate insurance coverage. One should also insure against losses that may be less likely to occur but can lead to financial disaster.

There are many types of insurance coverage available. It is often difficult to decide which one is best. It is helpful to list all one's insurance needs and rank them according to which possessions, if lost, would be a major financial loss. Insurance should be obtained for the irreplaceable and most necessary items first.

Do not insure anything that is affordable to replace. Often the insurance premiums for these items may be more expensive than the risk of loss or the actual value of the item. For example, full coverage auto insurance on an old, beat-up car may actually cost more than the car is worth. Consider insurance on a bicycle. Most bicycles are fairly easy to replace in relationship to the risk of theft and the cost of insurance.

Be sure the coverage is adequate. Property such as houses may increase in value. Insurance coverage that was purchased five years ago may not be adequate to replace the house at current costs. Many policies have a clause that adjusts the policy value with inflation. One should be sure to be familiar with the insurance policies chosen.

Buy insurance that provides coverage for situations in which a claim is likely to occur. For example, if Betty has a house in a low-lying area near a river, she should consider flood insurance. If one owns land or a business and hires workers, he or she should carry liability insurance and workers compensation. If the chances of a claim occurring are extremely small, one would usually be better off by using the money elsewhere.

Consider all the costs, both direct and indirect. Paying insurance premiums reduces the amount of money the individual or business has available for other purchases. Different levels of insurance will have different costs. The goal of using insurance as a risk management tool is to determine what insurance is needed, how much coverage is needed, and what cost is affordable.

Common Types of Insurance

Property insurance - Property insurance provides protection from financial loss due to property being damaged, destroyed, or stolen.

Liability insurance - Liability insurance provides financial protection from lawsuits in the event that the policyholder is held responsible for damage or personal injury to another person or to another person's property.

Life insurance - Life insurance provides protection from loss of income due to the death of a wage earner.

Accident and health insurance - Accident and health insurance gives protection from the expenses arising from an illness or accident and against loss of income because of illness or accident.

Property Insurance

The types of personal property are real and personal. Land and permanently attached buildings such as houses and machine sheds are considered real property. Personal property includes items that are not attached to the land, such as clothes, machinery, furniture, etc.

There are many different perils that property could be insured against. Perils include fire; flood; lightning; windstorm; hail; theft; smoke damage; explosion; riots and commotions; damage by vehicles; damage by aircraft; vandalism and malicious mischief; glass breakage; falling objects; weight of ice, snow, or sleet; discharge or overflow of water damage to heating or air conditioning system; freezing of pipes; collapse of building(s) or any part thereof; and damages to appliances, fixtures, and wiring.

A policy covering all the different perils may not be needed. An individual or business should work closely with their insurance agent to develop property insurance policies tailored to the needs of the insurance policyholder. The following are some the major types of policies for property insurance.

Package policy - A package policy covers a variety of perils which may include those covered by fire insurance, extended coverage, liability insurance, and theft insurance. Many agricultural business managers prefer package policies because the comprehensive coverage eliminates the need for several separate policies. Usually it is cheaper to have the same coverage in a package policy instead of having several separate policies for the same coverage. Homeowners, automobile, and farmowners policies would be examples of package policies.

Fire - Fire insurance can be obtained for items such as buildings, furniture, machinery, or raw materials. Usually a separate policy or clause is necessary to insure the contents of buildings. Fire insurance is especially important for an agricultural business because adequate fire fighting facilities may be a long distance away.

Extended coverage - Extended coverage is protection against the destruction of personal property. Extended coverage policies can provide protection against losses due to such hazards as windstorms, floods, hail, and smoke damage. In selecting a policy for property insurance, it is helpful to use extended coverage policies for specific areas that might affect the individual or

business. In this way, a policy can be designed to contain only what is needed and to reduce costs.

Theft insurance - Theft insurance covers losses due to theft. The premiums for theft insurance are often based on location and past claims.

Title insurance - Title insurance is protection of land titles.

Liability Insurance

Liability insurance provides financial protection for the policyholder in case the policyholder is held responsible for another party's loss or injury. Liability insurance protection can include payment for medical costs, property damage, and rehabilitation costs. Premiums for liability insurance are often based on past industry claims for agricultural businesses. The premiums may seem expensive. However, the risk of a loss such as paying another's medical expenses is high enough for most businesses that liability insurance should be obtained.

A business may have liability insurance to cover accidents caused by an employee driving the company car, a faulty product causing injury to a customer, or an injury caused by a customer slipping on something in the store.

Types of Life Insurance

Life insurance provides financial protection for the beneficiary if the policyholder dies. There may be more than one beneficiary to a policy. If a policyholder dies, the beneficiary of the policy is paid the face value of the policy. For example, if the holder of a $10,000 policy died, his or her beneficiaries would receive a total of $10,000, regardless of the premium amount that has been paid on the policy.

The three basic types of life insurance are term, permanent, and endowment. Although there are a number of different policies available, they are basically hybrids of these three.

Term - Term insurance provides financial protection against death without an option for savings. A term insurance policyholder pays premiums for a specified time and is protected for that time. When that time ends, the protection ends. If the policyholder dies before the end of the term policy, the face value is paid to the beneficiary. The face value is the amount for which the policy was set, such as a $50,000 term policy.

Term insurance is available for a specified number of years such as 5, 10, or 15, or until a specified age such as 65. Because term policies have no savings potential, premiums are often much lower than the other types of life insurance. Term insurance offers the most protection per premium dollar. There are several variations to term insurance, such as credit-life and

Permanent - Permanent insurance provides protection and savings. Protection is provided for the policyholder's entire life unless the policyholder terminates the policy and collects the cash value. The cash value equals premiums paid minus the insurance company costs plus interest. Upon the death of the policyholder, the beneficiary receives the face value of the policy.

The advantage of permanent life insurance is that you have coverage for life, or if you decide that life insurance is not needed, there is a cash value that can be received when the policy is terminated. The disadvantage is that premiums are higher than term insurance. Like term insurance, there are many variations of permanent insurance, like ordinary life and limited-pay life.

Endowment - Endowment insurance offers protection for a specified time. The policyholder pays premiums for the specified time like with a term policy, but unlike term the face value of the policy is paid to the insurer at the end of the specified time. The protection of an endowment policy ends when these premium payments are complete. If the policyholder wants to cash in the policy before its specified time, he or she will get only the cash value.

The disadvantage to endowment insurance is that the premiums are higher because the cash value increases more rapidly than any other type of life insurance. Frequently an endowment policy is set up to cover the cost of a child's college education. The advantage to saving with an endowment policy as opposed to a savings account is that if the policyholder dies before the end of policy, the face value of the policy will be paid to the beneficiary. However, with a savings account only the amount paid in plus interest will go to the beneficiary.

Factors Affecting Life Insurance Needs

Amount of cash available - All businesses and individuals have a limited amount of available cash. When an individual's or business's amount of cash is extremely limited, term policies are recommended because they provide financial protection at a low cost.

Age - Young people just getting started in their careers may have significantly different life insurance needs from older people or young children. People beginning their careers may often have a term policy for immediate protection and another type of policy to build up a cash asset. An older person who is more established may have a permanent policy or the protection of some other policy that is paid in full. A young child probably does not need to purchase immediate financial protection. However, parents may need to set up funds to finance a college or technical school education. One way of setting up these funds is through an endowment policy.

Level of debt - Someone with a high level of debt has more need for immediate financial protection to cover risk. A term policy for the amount of debt in addition to some other smaller policy may best meet the needs of one highly in debt. Someone who has very little or no debt might use a different strategy for meeting life insurance needs.

Cost of living - Life insurance policies should be designed to maintain the standard of living that one's dependents are currently used to. A good life insurance policy should provide protection of family members should a wage earner die. A limited-pay life or an endowment fund could also be used to help maintain a set standard of living as retirement income.

Health - Insurance companies consider the health of the life insurance applicant when determining eligibility and rates for policies. Companies may even check the health history of the applicant's relatives to try to predict the future health of the applicant. The more likely the applicant is to become ill, the harder he or she will find it to get a life insurance policy and to get low rates.

Income - Generally, the more income you have, the more protection you need. Frequently the amount of life insurance the individual should carry is based on seven times the individual's annual income. For example, the individual earns $35,000 a year; 7 x 35,000 = $245,000. Income alone does not determine how much insurance the individual needs. The other factors will raise or lower the amount of life insurance needed by the individual.

Accident and Health Policies

Prices for medical services have increased dramatically in the past several years. Sickness or accidents can be considered a major budget item and can spell financial disaster for many families. Three basic types of medical insurance are discussed below. Employers sometimes offer medical insurance as a benefit.

Hospitalization and surgical - Insurance for hospitalization and surgical expenses is a way of protecting against the costs of sickness or injuries. Hospitalization and surgical policies cover costs of the hospital room and board, operating room fees, anesthesia, ambulance service, X-rays, laboratory tests, and medication. These policies usually contain payment limits for each category.

Major medical - These policies are designed to provide protection against very large bills in case of extended hospital stays or specialized treatments. These policies usually specify a percentage, such as 80 percent, of allowable expenses.

Income protection/disability - This type of insurance is designed to provide financial protection during the recovery time of a wage earner. It may also be designed to provide continued income should a wage earner become permanently disabled.

Summary

Agricultural businesses face a variety of insurance needs such as protection from unexpected economic losses, liability, and financial losses. There are four basic types insurance: property insurance, liability insurance, life

insurance, and accident and health insurance. The manager's responsibility is to determine how much of each type of insurance is needed for an individual situation.

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Lesson 17: Cooperating Agencies in Agriculture

There are several cooperating agencies in agriculture. These agencies were created by the federal government to meet important agricultural goals. These goals include providing specific services to people in agriculture, helping insure the country with an adequate food supply, insuring wise use of natural resources, providing the latest technical information, and developing financing and management abilities to meet these goals.

Cooperating Agencies

Although there are many different organizations involved directly or indirectly with the goals previously mentioned, the seven most prominent agencies sought out by agricultural businesses are listed below. Each of the agencies is responsible for providing different services. A brief summary of the types of services provided by each agency will be discussed later in this lesson. For more detailed information about a particular agency, research the agency in the local library or contact a representative of the agency by phone. A federal information number, 800-392-7711, can provide information about federal government agencies.

1. Agricultural Stabilization and Conservation Service
2. Soil Conservation Service
3. Farmers Home Administration
4. University Extension
5. Missouri Department of Conservation
6. Small Business Administration
7. Missouri Agricultural Education

Agricultural Stabilization and Conservation Service

The Agricultural Stabilization and Conservation Service is commonly referred to as ASCS. The primary role of ASCS is to administer farm assistance programs designed by the federal government. In recent years, these programs have included the Payment in Kind (PIK); feed, grain, and wheat program; and the dairy buy-out program. The ASCS office will provide information to agricultural producers on how to meet the guidelines established for farm programs. ASCS frequently works with SCS in implementing the various programs.

A secondary responsibility of ASCS is to establish and maintain conservation programs. Generally, the ASCS office is located in the county seat. An aerial photo of any property located in that county can be obtained from this office.

Soil Conservation Service

The primary responsibility of the Soil Conservation Service (SCS) is to administer the soil and water conservation programs established by the federal government. SCS also provides conservation and engineering assistance, performs soil surveys, and assists farmers in implementing conservation practices. Individuals interested in information about terraces, diversions, conservation tillage systems, soils, and ponds could contact SCS.

SCS is a major participant in the implementation of new federal conservation programs established by the 1985 Food Security Act. The programs include sodbuster, swampbuster, conservation reserve program, and conservation compliance. Individuals must work with SCS to develop a conservation plan for their farm by January 1, 1990 to maintain eligibility for all federal farm programs. The plan must be implemented by Jan. 1, 1995.

Farmers Home Administration

The primary role of the Farmers Home Administration (FmHA) is to provide financial assistance to individuals who are unable to obtain financing through other alternatives. FmHA is a government agency that provides this assistance by guaranteeing payment to other creditors or by direct government loans. FmHA guarantees banks up to 90% of the loan, thus encouraging more loans to farmers and agribusinesses. FmHA also provides housing loans.

FmHA provides financial assistance to businesses or industries that will provide employment in rural areas. Technical assistance is provided to business and industry through financial counseling programs. Because of high demand, individuals or businesses receiving FmHA loans are encouraged to seek other financing as soon as they are able. This will free funds for others seeking assistance.

University Extension

University Extension, formerly called Missouri Cooperative Extension Service, has an office located in each county (usually the county seat). This agency provides information to the public about agriculture, home economics, business and industry, and community development. Through University Extension, all Missouri citizens can attend short courses or seminars, or examine printed materials or video tapes. Extension also operates the 4-H program in Missouri. Usually no fees are required.

Missouri Department of Conservation

The Missouri Department of Conservation (MDC) is responsible for the protection, management, and conservation of fish, wildlife, and forestry resources. This task is accomplished through law enforcement; management of public wildlife areas, forests, and lakes; research; conservation education; and a variety of programs designed to assist landowners. Several resource persons

such as conservation agents, wildlife services biologists, fishery biologists, and foresters are available to provide assistance.

The conservation agent, located in each county, is the individual to contact for assistance. He/she may direct you to one of the other resource persons. MDC can provide assistance in maintaining and improving wildlife habitat and ponds, controlling wildlife damage, and managing forested areas properly. MDC issues permits to sport hunters and fishermen, trappers, fur dealers, and commercial fishermen. MDC also purchases and maintains river access areas, provides fish for stocking, and sells tree seedlings for reforestation.

Small Business Administration

Through contracts, the Small Business Administration (SBA) funds Small Business Development Centers and SCORE Chapters. Small Business Development Centers and Score Chapters, located throughout the state, help people get into business and stay in business. To do this they provide prospective, new, and established persons in the small business community with financial guidance, management counseling, and training. A small business is defined as one which is independently owned and operated and is not dominant in its field.

These agencies provide technical expertise that often is essential to the survival of a small business. This expertise includes developing bookkeeping procedures, establishing a market strategy, and analyzing local market needs. Training workshops may be held on a variety of subjects from customer relations to tax management. Workshops may have a minimal charge, but all other services are free.

Missouri Agricultural Education

Missouri agricultural education provides educational opportunities at the community, high school, community college, and university levels. One of the purposes of this program is to provide in-depth instruction in production and agribusiness, topical update classes, the farm business management analysis program, and leadership education classes. The information is available to full-time and part-time farmers as well as other community residents.

Summary

There are several agencies that cooperate with agribusinesses. These agencies are designed to provide technical and financial assistance to agricultural businesses. As a farm or agribusiness manager, find out which agencies can be helpful in your operation.

Credits

1986 Facts Book of U.S. Agriculture (Publication 1063). U.S. Department of Agriculture.

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Personal and/or telephone interviews with the following:

Lil Ferrell, Small Business Development Program
Wanda Gebhardt, Farmers Home Administration
Paul White, Missouri Department of Conservation
Terry Heiman and Bob Stewart, Agricultural Education
Ron Plain, University Extension

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT III - PLANNING THE FARM BUSINESS

This unit is referenced to the Missouri Farm Planning Handbook (Manual 75). A copy of Manual 75 can be obtained from the Instructional Materials Laboratory, 10 Industrial Education Building, Columbia, MO 65211.

AGRICULTURAL MANAGEMENT AND ECONOMICS

UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

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UNIT IV - OPERATING THE AGRICULTURAL BUSINESS

Lesson 1: Role of the Employee in the Agricultural Business

Characteristics an Employer Looks for in an Employee

Everyone wants to succeed as an employee. An employee must get along with people and have positive traits and attitudes to fill his or her role successfully in the work place. The three most important characteristics an employer looks for in an employee are honesty, dependability, and self-control.

Honesty - An employee should be truthful about all things. Employees should not waste time when they are supposed to be working and should respect the property of others. Employees should also always keep promises, give truthful information, and be careful with money.

Dependability - Employers want employees they can count on to complete assigned duties on time and to follow directions. Employees should also be punctual and regular in attendance and should take only the time allowed for lunch and breaks.

Self-control - Employees should be able to control their emotions. They should be able to control their tempers and to stay calm and poised in tense situations. A good employee should not only refrain from making harmful remarks to other employees, but also accept constructive criticism. Employees who can show enthusiasm without becoming overbearing are an asset in the work place.

Some other characteristics employers desire in employees are adaptability, cooperation, courtesy, enthusiasm, initiative, loyalty, patience, and tact.

Organizational Structures

There are three main types of business organizational structures: line organization, functional organization, and line-and-staff organization. These structures provide ways for management and workers to communicate. The structures define which employees are in positions of authority and help keep the agricultural business operating efficiently.

Line organization - In the line organization structure, each employee is responsible to only one supervisor. Each supervisor oversees several employees. See Figure 1.1.

Functional organization - Each employee may have more than one supervisor in a functional organization structure. Supervisors specialize in a certain area. For example, in a factory there may be one supervisor in charge of inspection and one in charge of assembly. One assembly-line worker would have both supervisors. See Figure 1.2.

FIGURE 1.1 - Line Organization

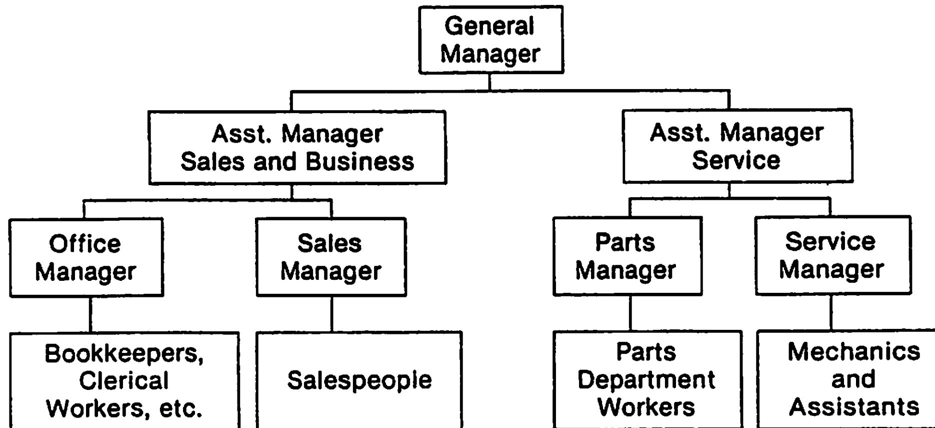
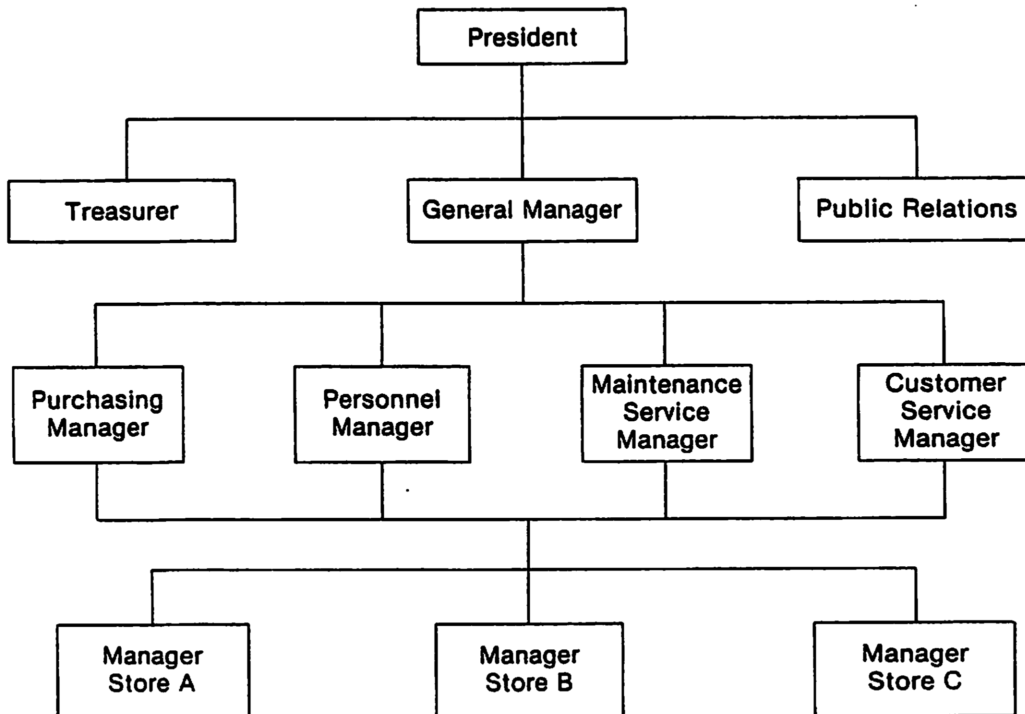
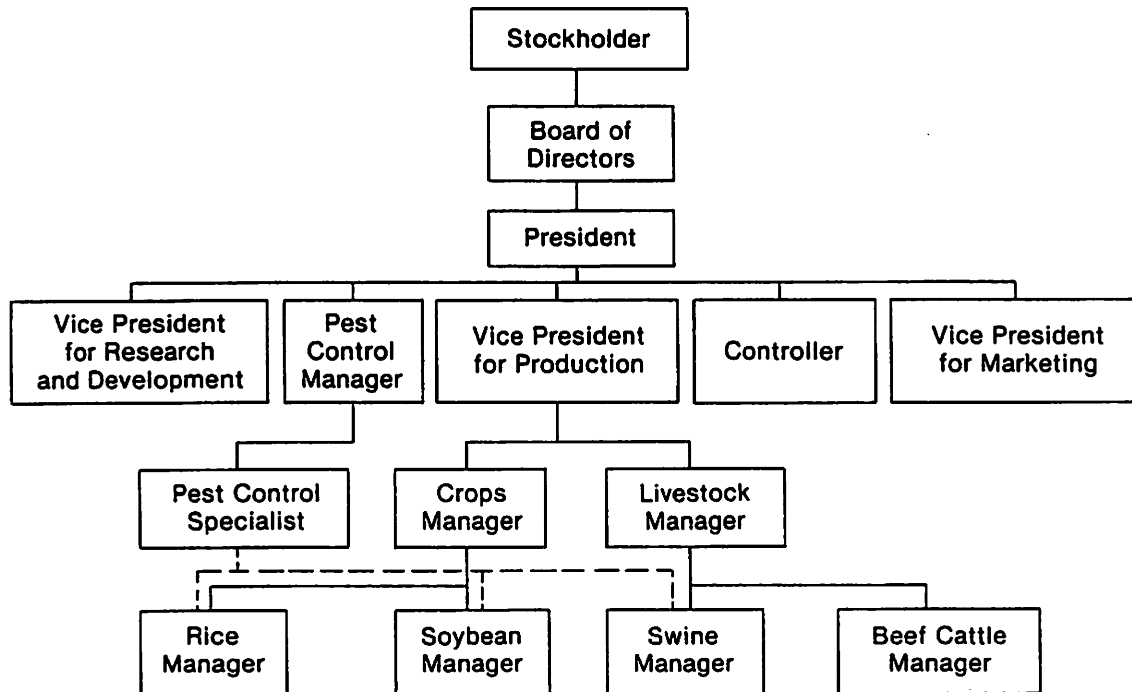


FIGURE 1.2 - Functional Organization



Line-and-staff organization - Each worker in a line-and-staff organization structure has one main supervisor and special supervisors for specialized areas.

FIGURE 1.3 - Line-and-Staff Organization



Co-workers

Co-workers are all the people who work in one place of employment. One's supervisors, peers, and subordinates are all considered co-workers.

Co-workers expect courtesy, cooperation, consideration, and adequate work performance from each other in the work place.

Superiors and Subordinates

A superior is one's supervisor or employer. Superiors expect employees to arrive and leave on time from work. Superiors also expect employees to be courteous, honest, dependable, productive, and loyal to the employer.

Subordinates are employees that work under one's supervision. Subordinates expect their superiors to show courtesy, respect, and tact; to demonstrate leadership; and to ask them rather than order them to do things.

Superiors should not publicly reprimand subordinates. Public reprimands are embarrassing for the subordinate and will cause tension between the superior and the subordinates.

Employee Benefits and Restrictions

Businesses usually have a system of employee benefits and restrictions that employees are expected to follow. These benefits and restrictions are set up to help employees and to make the business an efficient and smooth-running operation.

Seniority systems provide benefits to employees who have worked at a business for a long period of time. Seniority systems are based on length of service as an indication of knowledge and proficiency needed for advancement. The longer an employee works, the more benefits he or she gets.

Some businesses are unionized. Unions provide employees a means to unite and push for better wages, working conditions, and benefits. Membership in the union at a work place may be optional or mandatory.

Businesses may use a formal or informal organization for authority and communication. In a formal organization, the proper channels for disseminating information and making assignments are followed. In an informal organization the grapevine often plays a role, and proper channels may be bypassed.

Some businesses have established dress codes. Some codes require dress clothes. Many codes require employees to wear uniforms or certain types of clothing proven more satisfactory than others for the specific work place.

Most businesses have specific times set aside during the day as break times. These times are short rest periods to refresh employees so they can do the best job possible when they return to work.

Morale

Morale is the spirit or enthusiasm displayed by people working together. High morale may be evident in employee dependability and co-worker encouragement. Morale directly effects the business. High morale results in high productivity; low morale results in low productivity.

Practical Steps for Employee Success

In whatever type of enterprise an employee is involved, the employee should try to set goals and to increase his or her worth to the employer.

Employees should help the employer to earn more money than the employee costs to employ. An employee can do this by mastering his or her present job and by taking initiative to learn more about the business.

Employees should also strive to improve human relations skills. They should learn to accept co-workers and tolerate inconveniences. They should also learn to cooperate and work well with others.

Ethics

Ethics are the basic principles that determine an employee's attitude and direct his or her actions.

Employees should develop good ethics so they can derive more satisfaction and enjoyment from their jobs and improve opportunities for advancement.

When workers practice good ethics, job satisfaction and enjoyment increase because of the improved atmosphere at the work place. This atmosphere is enhanced when employees are willing to accept responsibility on the job and be loyal to the employer. When employees work with a sense of professionalism and are willing to do a fair amount of work for their wages, not only does production increase, but the employees develop pride in their jobs. All the workers will work better together knowing that each one is pulling his or her own weight.

Employees will also find that good ethics will give them more opportunities for advancement and make them better prepared for the responsibility of any job.

Summary

To be successful as an employee, one must accept the responsibilities that go with a job and learn to work within the business' structure. The correct attitude and ethics can help employees fulfill their roles in the business and put them on the way to reaching their career goals.

Credits

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Lesson 2: Communication Skills Needed in Agricultural Business

Effective Communication

For communication to be effective, it must be clear enough to create the desired response from the receiver of the communication.

What are the Main Concepts of Written Communication

The writer must understand that although written communication is based on the spoken language, there are some important differences. When communication is written down, the chance to explain the message further is lost. Speech is not limited in this way. However, writing is more permanent and more formal. Because of its permanence, writing can be more easily criticized and demands the correct and precise use of words and grammar.

Written communication is made up of words, sentences, and paragraphs that have been put together to do a particular job. A writer must master the process of assembling these parts to accomplish the job before he or she can become a truly effective writer.

Good writing skills are developed by applying not only the grammatical principles the writer has learned, but also the experience he or she has accumulated. A good writer can learn to recognize and try to improve weak points. In addition to self-criticism, the good writer can use suggestions from others to improve.

Written Communication Goals and How to Achieve Them

There are three main goals of written communication:

To transmit a message with clear meaning - The message in written communication should be transmitted so that it has a clear meaning.

To reveal writer's personality - In addition to getting the writer's message across, good written communication can also reveal the writer's personality.

To convey ideas and images - Skillful writers plan their communication so that they not only convey the ideas they want to express, but also the images they want to reveal to the reader.

To accomplish the goals of written communication, writers follow a three-step plan:

Identify purpose. - The first step in planning a successful letter or memo is to identify the reason for writing it. The writer must decide on the purpose, which is the central idea of the message. It usually can be written in a few

words or a fragment of a sentence and serves as a brief outline for the message.

When identifying the purpose of the communication, the writer must use a form for the message that fits the purpose. In business, two forms are commonly used to transmit written communications: the formal letter and the memorandum. The formal letter is written communication used to transact business or communicate with strangers or acquaintances. The memorandum, or memo, is a standardized form of written communication used to communicate with people within a business. The memo, therefore, makes it easy to communicate with co-workers, supervisors, or employers.

<u>List ideas and facts.</u> - Next, the writer lists all the information related to the purpose of the communication. The writer probably will list more information than he or she will use in the message. Listing extra information is a good technique, because it gives the writer the opportunity to examine the relative importance of the material and to choose ideas and facts that will convey the correct message to the reader and accomplish the purpose of the communication.

<u>Organize information.</u> - After listing the facts and ideas that relate to the message, writers number them to indicate the order in which they will use them. They select and present the information in the following sequence:

1. Facts that direct the interest of the reader to the purpose of the message
2. Facts that reveal the purpose of the message clearly and concisely, including appropriate explanation of the action to be taken and expression of the writer's feelings

Rough Drafts

After the order of the information to be put into a letter or memo has been identified, it is time to write a rough draft. A rough draft is the preliminary version of the final written communication. Beginning writers should expect to make rough drafts of even simple letters and memos. Even experienced writers often make several drafts before perfecting important communications. In rough drafts, the writer attempts to organize and improve the material so the reader will want to read on and can easily understand the message. Ideas should flow smoothly.

To prepare a draft in which ideas flow smoothly, the writer first creates an opening that will capture the reader's interest and identify the purpose of the letter. The writer then arranges and presents the ideas so that they lead the reader to the request for action or the closing.

Reader's Questions

People are interested in themselves. They are interested in other people and things to the extent that the people and things relate to or affect them.

Because of this, writers must identify with their readers and express their own purposes, ideas, and facts in words and phrases that will reflect the reader's point of view and concern.

Most readers start to read a written communication, particularly a business letter or memo, with the following three questions in mind:

Why was this sent to me? - The answer to this question reveals the purpose of the letter or memo and relates it to the reader. The purpose should be clear.

What does it do for me? - The answer to this question translates facts and ideas into an explanation that sustains and satisfies the reader's interest. A benefit promotes the well-being of the reader. The benefit to a reader may be a payment, an advantage, a kindness, a courtesy, an opportunity, or perhaps simply the transmittal of helpful or useful information. It usually is a combination of several factors.

Do I need to do something? - The writer's request or suggestion that the reader take action is usually near the end of the communication. Not all communications require action from the reader, but when such action is needed or encouraged, the communication should state what is to be done and how. In addition, this statement should be worded so that the reader is both willing and encouraged to act.

The Five C's of Written Communication

The five C's of written communication are the important factors that good writing must contain.

Clarity - A good writer's work is clear. Good writing can be read quickly and with a minimum amount of effort. The reader should never have to wonder what the writer was trying to communicate.

Conciseness - Individuals who receive written communication, especially business employees, often do not have time to spend reading a long letter. Readers appreciate written communication that is short and to the point.

Completeness - Although written communication should not be long-winded, it should be able to cover the subject and not leave the reader with any unanswered questions about the message.

Correctness - Correct content, word usage, and grammar are important and necessary to businesses and individuals. The quality of writing produced by a business or individual reflects directly onto the perception the reader will form of that business or individual. A well-written piece of communication free of any type of errors not only accomplishes the communication task, but also makes the business look professional.

Courtesy - The image of the business is also affected by the tone of the written communication. No matter what the message is or what the relationship

of the reader and the writer is, written communication should always be written in a courteous tone.

Guidelines for Producing an Attractive Letter

An attractive letter is not only pleasing to the eye, but it also communicates the message more efficiently than an unattractive letter. The appearance of any piece of written communication reflects the professionalism of the writer. The following are some guidelines that should be followed to produce an attractive letter.

Plain, white paper or business stationery should always be used. Fancy paper looks frivolous and unbusinesslike. A letter should never be written on lined paper.

The spacing of the margins should always be even. Spacing between lines should be consistent. Well-organized spacing of the letter on the page helps the reader to recognize quickly what is important.

Letters should be folded so they open ready to read. The return address and the greeting should be the first parts visible. There should be no more folds in a letter than necessary.

Hand written letters for personal communication are acceptable for invitations, acceptances, condolences, congratulations, and thank-you notes. If a letter is written by hand it should be done neatly and legibly. Blue or black ink should be used. Hand written letters should be arranged in the same format as typed letters.

The Telephone in Modern Communications

The telephone is one of the most important instruments of communication in the world. The telephone keeps businesses in touch with other businesses and customers. Although the telephone is so common and convenient, telephone conversations lose the advantage of body language in face-to-face communication and the advantage of permanence of written letters. The business employee must recognize and compensate for these limitations.

Answering the Business Telephone

A business telephone should be answered promptly. There should be a maximum of three or four rings. The greeting should be friendly and should include the name of the company. The tone of the person answering should be cheerful and courteous. Calls should be kept short, but the caller should be allowed to end the conversation.

Procedures for Taking Telephone Messages and Using the Intercom

Most business offices use telephones with intercom systems. Because communication systems within businesses differ, employees should request a demonstration of the system used by their business.

It is the responsibility of the message taker to make sure all the correct information in a message is passed along to whom it was intended. To insure against confusion, messages should always be written neatly.

All messages should include the name of the caller, the date of the call, the time of the call, the caller's telephone number, the message itself, and the name of the employee who took the message. Some businesses provide forms for telephone messages.

Telephones in the business establishment can be directly dialed by using the intercom. An intercom is used to locate recipients of calls and to transfer calls. Each telephone in the office should have its own intercom number. To use the intercom, one should press the labeled intercom button and dial the desired party's intercom number.

An employee taking a call may not be able immediately to locate the person being called. In this case, the employee should ask the caller to wait while he or she tries to find the person being called. If that person cannot be found within a minute or so, the employee should take a message.

Use of Two-way Radio by Agricultural Businesses

Many businesses, especially those that deliver products or services to the farm, use two-way radio communication systems.

For example, a feed delivery truck may have a radio so that the office can tell the driver where to make the next delivery. On a large farm business, it is common to have two-way radio communication between the farm house and the farmer's truck or combine. Others who may use the two-way radio include ranch foremen, grain elevator managers, veterinarians, and sales clerks who are making reports and checking for messages.

Conversations on the two-way radio should involve the same kind of courtesy as a telephone conversation. Each business, however, will have its own protocol and jargon for radio conversations.

The two-way radio is regulated by the Federal Communications Commission, and federal laws govern the two-way radio's use. One law prohibits the use of profanity on the radio. To get information on the proper and lawful use of a two-way radio, one should consult FCC regulations.

Computer Modems

Computers are the newest technical advancement in the world of business communication. Computers can be used to purchase orders electronically, to send and receive electronic mail, and to check market conditions and projections.

Summary

Good communication is essential to a business. When communication is carried out in a proper and efficient way, the business, customers, and employees all benefit.

Credits

Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

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Lesson 3: Skills Needed for an Agricultural Sales Career

Selling

Selling is the process of one person exchanging goods or services with another for some medium of exchange, such as money. Selling often involves persuasion.

Because customer relations and business services affect the customer's decision whether to buy, every employee in the business is involved directly or indirectly with the selling process. For example, the janitor of a business may not even be present during most sales transactions, but if he or she does a good job of keeping the business clean, customers will have a better image of the business and may be more likely to buy there.

Importance of Sales

Sales generate income. In almost all agribusinesses, sales are the major source of income. Without adequate sales, a business will fail.

Pay for Salespeople

Commission - Commission is a set percentage of each sale amount that is given to the salesperson as pay. Salespeople working on a 25 percent commission will be paid $25 for every $100 of sales they make. Commission pay is good because it gives the salesperson incentive to make sales, but in some cases, the competition to get sales between salespeople in the same business can cause harmful tension.

Straight salary - A straight salary is a set amount of pay a salesperson receives for a certain time period of work. Straight salary is usually paid by the hour, by the week, by the two-week period, or by the month. Straight salary is good because it assures employees they will have a steady salary even when sales are not good. Straight salary also avoids the tension between employees created by commission. However, straight salary does not give employees the incentive to sell that commission does.

Combination - The combination of commission and straight salary is the most popular form of pay for salespeople. This combination gives employees the security of always having a set base salary, but also provides incentive to sell through the commission. A salesperson who is paid this way may make $4 an hour and a 5 percent commission.

Advantages and Disadvantages of a Selling Career

Advantages - Jobs are readily available for good salespeople, and a good salesperson paid on commission has the potential for unlimited income. Also, a salesperson can plan on interacting with a variety of people on the job.

Disadvantages - One disadvantage of selling with commission pay is that there is no guarenteed income. In addition, salespeople sometimes have to deal with customer dissatisfaction, which requires tolerance and understanding. Many salespeople are required to travel extensively; some are given a certain area to cover. Salespeople may also be required to put in long hours.

Personal Skills Needed in Selling

Outgoing personality - To be successful, a salesperson needs an outgoing personality. He or she must enjoy talking to and working with people.

Initiative - The good salesperson also shows initiative by expressing interest in the customer's needs and directing conversation toward a sale.

Persistence - Salespeople should be persistent in their approaches. They should never give up on a sale easily. They should strive to improve selling skills and try to use new methods of selling.

Ability to make good first impression - A salesperson who can impress a customer during the first interaction has a great asset for making a sale.

Good communication skills - A salesperson must be able to communicate with customers effectively. The ability to get the sales message across effectively is a must for good selling.

Communication Skills and Technical Information

Communication skills - A salesperson should master the art of listening. Being a good listener allows the salesperson to understand the customer's wants and needs so the salesperson can address these wants and needs directly in the sales pitch. Intent listening also shows the customer that the salesperson is interested in the customer's wants and needs. The salesperson should never jump to conclusions, let his or her mind wander, or interrupt the customer during a conversation.

The salesperson, of course, must be able to communicate orally. This does not mean being a fast-talking wheeler-dealer; it means talking clearly and concisely with the customer and getting the salesmessage across.

Salespeople must also be proficient at written communication. They should be able to write reports and letters needed for business transactions accurately and effectively.

Technical information - Salespeople must have correct and accurate knowledge of the products or services they are selling. The salesperson should also have an adequate understanding of the manufacturing process and of new technology in the area of the product or service. Salespeople should keep up with current laws and regulations that affect the product or service.

Not only should salespeople have a broad base of knowledge about their own products and services, but they should also know their competitor's products and services as well as they know their own. This allows salespeople to point out advantages and to counter objections to their products.

Five Stages in Making a Sale

Preparation - Before he or she is ready to make a sale, the salesperson must prepare. This may include honing communication skills, brushing up on technical information, or getting in the right frame of mind to present a good sales pitch.

Approach - Salespeople must develop a good approach to customers to gain their attention. Successful approaches vary from friendly personal greetings to hard-sell pitches about the product. The three most common types of sales approaches are the greeting approach, the merchandise approach, and the service approach.

Demonstration - The salesperson should conduct a demonstration to gain the interest of the customer.

Overcoming resistance - After the customer has gotten a good look at the product or service in action, the salesperson must overcome any resistance to the sale and get the customer to feel a want or need for the product or service. Personal skills and communication skills play a major part in this stage of a sale.

Close - After the salesperson has fully informed the customer about the product or service and has used all his or her personal and communication skills to sway the customer toward a sale, the salesperson must give one final effort to spur the customer on to make a purchase.

Sales Approaches

Greeting approach - The greeting approach involves a friendly, personal greeting with a smile. The customer may be addressed by name if he or she is an acquaintance of the salesperson. With the greeting approach, the salesperson should be direct and straightforward with the customer and take control of the conversation.

Merchandise approach - The salesperson's first comment is about the product in the merchandise approach. This approach lends itself well to situations in which the customer is already looking at a particular piece of merchandise when the salesperson approaches. With this approach, the salesperson can

immediately point out the main features and advantages of a product to start the conversation. This approach is favored by sales experts.

Service approach - The service approach is the most common type of approach. With the service approach, the salesperson simply checks with the customer to see if he or she needs assistance. It is important, however, for the salesperson to avoid asking questions that can be answered "yes" or "no." Instead of saying, "Can I help you?" the salesperson should say, "What can I help you with today?" This phrasing will get customers to think about what they are looking for rather than whether they want help from a salesperson.

Buyer Motivation

People buy things to satisfy needs and wants.

Needs - Needs are required for the well-being of the individual. There are five levels of needs:

1. Physical - Physical needs are needs for food, shelter, and clothing.
2. Safety - People have needs to be secure and free from harm.
3. Affection - All people, young and old, have the need to be loved.
4. Recognition - People need to feel that their lives are worth something; that they are important.
5. Self-actualization - People need to establish an identity and accomplish personal goals.

These needs are ranked in order of importance to people. For example, a person will strive to fulfill the need for food before the need for affection.

Wants - Wants may not be essential for a person's survival. Wants can be things that simply give a person satisfaction or enjoyment. However, wants can also be needs. For a person who is starving, food is not only a need, but also a want.

An example of a want that is not a need is a new house for a family that already has a functioning house. Although the old house still satisfies the physical need for shelter, the family may think it does not have enough room or is not in the most convenient location. People usually do not satisfy wants that are not needs until after they have satisfied their needs.

Summary

Selling is a competitive, demanding career, and to succeed in it one must master essential personal and communication skills. A salesperson may be successful with any type of approach, but the key to successful selling is understanding what motivates a customer to buy.

Credits

Agricultural Business Sales and Marketing. University of Missouri-Columbia: Instructional Materials Laboratory, 1984.

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Lesson 4: Promoting Agricultural Products

Promotion

Promotion is communication intended to sell a product, service, or idea.

Objectives of Promotion

The three objectives of promotion are to inform, to create interest, and to persuade.

To inform - Promotion can make potential buyers aware of products and services available. Promotion can also show these buyers the need for the products and services and how to use and maintain the products once they have been purchased.

To create interest - Promotion can focus on specific selling points of a product or service to create consumer interest. Selling points are the benefits a product or service has to offer consumers. Some products may offer specialized features as selling points. These features could be a truck with an extra large bed or a breakfast cereal with more vitamins than most. Some products may offer versatility as a selling point. Promotion can even create demand by convincing the public of new ways to use products.

Promotion is often used without specifying a product to show the general benefits of a business to society. By promoting these benefits, a business can create a positive public image. Promotion may also focus on the benefits of an entire industry to society. For example, the National Dairy Council promotes the benefits of the dairy industry. This type of promotion creates interest in all the businesses in the industry.

To persuade - The final objective of promotion is to persuade consumers to buy the products or services.

Promotional Methods Used in Agriculture

A variety of methods of promotion are used in agriculture. Each method may work best for a certain targeted audience or market situation.

Personal selling - Personal selling is the act of one individual informing another about a product in a way that makes the newly informed individual interested and persuades him or her to buy the product.

Displays - A display is an arrangement of merchandise set up to attract the attention of potential customers and to persuade these customers to buy the merchandise. It is important for displays to have attractive packaging and to point out clearly the beneficial features of the displayed items.

Exhibits are a type of display used at fairs, conventions, and trade shows to allow audiences firsthand observation of products and services. Representatives of the product or service exhibited are usually present, and they can answer questions from the audience. Exhibits at big events, such as the state fair, can provide a large amount of exposure.

Demonstrations are displays that actually show how a product or service works. Demonstrations can give the audience a close-up look at the product or service. The demonstrator can answer questions and, in some cases, allow some of the audience members the opportunity to work with the product or service.

Sponsorship - Sponsorship is providing financial support to an activity outside the business. Sponsorship by businesses helps create a good image and establish future customers. Awards, events, and individuals competing in events are often sponsored by businesses. An agribusiness may provide funds to a local high school for a scholarship which is given in the name of the agribusiness.

Sales promotion - Sales promotion is giving away items that contain a message with the name and address of the business on them. Businesses hope that people will appreciate the free item and form positive name recognition with the business.

Publicity - Publicity, also called "free advertising," occurs when a business is mentioned in a mass media news story. If the news story mentions the business favorably, this type of promotion can be especially beneficial. The audience knows a news story is not paid for by the business, so the reference to the business should be an objective, unbiased opinion of a person outside the business. The audience knows that advertising does not have this objectivity.

Advertising - Advertising is a paid, non-personal promotion of products, information, or services by an identified sponsor.

Advertising Media

Advertising can be used to reach broad, diverse audiences or to reach specific, targeted audiences depending on what medium is used. Some of the major media used in advertising include television, radio, newspapers, magazines, and trade journals.

Some other forms of media used in advertising include billboards, telephone directories, and association yearbooks.

Benefits of Advertising

Advertising can get the attention of potential customers and deliver the message fast. It can reach people economically and identify buyers in large populations. An advertisement in a trade journal can reach the specific group of people in a certain trade and is much cheaper than sending out a personal

salesperson to talk to each of them individually. Also, with advertising the business can control the presentation of the facts easier than with personal sales pitches.

Advertising Rates

Many factors determine advertising rates. Rates vary with different types of media.

Size of advertisement - Media will charge rates based on the size of the advertisement. The broadcast media, which includes television and radio, base rates on the length of the advertisement in minutes and seconds. Print media such as magazines and newspapers base rates on the size of the area used for the advertisement.

Size of audience reached - Another major factor in determining advertising rates is the size of the audience reached. In broadcast media, the size of audience is affected by the time of day and the program slot that the advertisement goes with. A radio commercial aired during the time that many people are driving to or from work will cost more than one aired at most other times. A television commercial aired during a popular show will usually cost more than one aired during a show with low ratings.

In print media, the size of audience reached is determined directly by the circulation of the publication. A big-city newspaper with national circulation will charge more than a small-town newspaper for the same size advertisement. However, the size of the audience is also affected by the placement of the advertisement and the day of publication. For example, a 2-column by 5-inch advertisement on page two of the Sunday paper will cost more than a 2-column by 5-inch advertisement buried in the classified section of the Tuesday paper.

Make-up of audience reached - The make-up of the medium's audience can affect the advertising rate. A magazine with a specialized audience may have the same size audience as a small-town newspaper, but the magazine can charge higher rates for the same size advertisements.

Advertisers will pay to know they are reaching the most likely buyers of their products. For example, a company that produces bowling equipment will pay extra money to advertise in a magazine such as "Bowler's Monthly," because the company knows the readers are the people who will be interested in buying bowling products. If the company advertises in a publication with a general audience the same size as the readership of "Bowler's Monthly," the number of bowlers who see the advertisement will not be as high.

Summary

Promotion is used by businesses to inform the public, to attract customers, and to persuade them to buy products. Promotion ranges from a salesperson giving a sales pitch to a business providing uniforms for a little league

baseball team. In today's world of complex mass communication, many businesses use advertising, a type of paid promotion that is non-personal. Advertising allows a business to target its message economically to a certain size and type of audience.

Credits

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Lesson 5: Using Agricultural Displays

Classifications of Displays

Promotional - Promotional displays are used to attract the attention of customers to products and to prompt the customers to purchase the products. Promotional displays are usually found in retail stores.

Institutional - Institutional displays promote the business as a whole. These displays present a good image of the business and may be concentrated on a particular aspect of the business. Institutional displays may promote a specific community activity, such as FFA Week, or they may have holiday themes.

Location of Displays

Outside the business - Exhibits at fairs and trade shows are a type of display usually done outside the business. Businesses set up exhibits at these events for more exposure than they could get at their places of business.

Demonstration plots are a type of outdoor display. These displays allow people passing by to see, for example, an actual field of crops that were grown using a certain product.

Businesses often set up displays outside the building to feature items too large to display inside. An advantage to these displays is that visibility is not limited to business hours or the confines of the building. Not only can customers going into the business see the displays, but people driving by the business at any time can also see them.

Windows - Window displays are used to draw customers into a business. Although they are not as visible as outside displays, they can still catch the eye of people passing closely by the business.

Entrances and exits - Displays are especially effective at the entrances and exits to a store because they are the areas with the most customer traffic. A display at the entrance can serve as a greeting to the customer and give a first impression of the business, and a display at the exit can leave the customer with a favorable impression.

Points of purchase - The point in a store where purchases are made is the area with the second largest amount of customer traffic. Display items at points of purchase are usually inexpensive, common things that customers are likely to purchase on impulse as they are checking out.

Open areas - Open areas in a store are good places for large displays. These displays have high visibility within the store because they stand out from the other merchandise.

Walls - Wall displays utilize space efficiently. They not only take very little horizontal space, but they also decorate and make use of walls that would otherwise be idle vertical space.

Hanging - Hanging displays also save space because they require no floor area.

Shelves - Shelf displays allow the store to categorize items easily using the shelves to group them.

Closed cases - Displays inside closed cases are used for fragile items, expensive items, or items that need special handling. Closed cases are efficient for displaying small items.

Shadow boxes - A shadow box is a display box that is open in the front. Shadow boxes often use lighting and special effects such as motion or animation to draw customers' attention to the displayed items. Shadow boxes are often used for expensive items.

Steps in Planning an Effective Display

Establish theme - The theme of a display is the central idea that unites the displayed articles. The theme may relate the product or service of the business to the customer's needs or situation. Seasons, current events, and holidays are general ideas commonly used as themes.

Plan setting - Determine the background, floor covering, and extra accessories that will best emphasize the benefits of the product or service being displayed. Consider the theme when planning the setting. Use the setting to convey and enhance the theme. For example, if the theme of a display at a floral shop is Valentine's Day, the display could use bright red in the background and could have white lace draped across the floor. The display could use cupid mannequins and heart-shaped pillows as accessories.

Draw sketches - Sketches can show the general layout of the display and provide a general plan of action. Sketches can help the designer determine the materials that will be needed for the display. The designer should make several different sketches to try different possibilities. Two views are usually appropriate: the front and the top view.

Effects to Enhance a Display

In a display, different sizes and unique shapes attract attention. Magnification, or making a model "bigger than life," can show fine detail or make displays novel and attractive. Miniaturization is making a small-scale model of something that might be too large to show life-size, such as a building.

Adding sound to a display can attract customers and grab their attention. Adding animation in the form of characters like Smokey the Bear and using visual aids such as slides, film clips, and video tapes can create interest.

Adding the unusual or the unexpected to a display can attract customers. For example, a display with a good smell or with an inanimate object that "talks" to customers can stir up curiosity and attract attention.

Changing Displays

Displays should be changed frequently. Business displays should be changed every week or every two weeks for variety. Customers get tired of seeing the same thing and lose interest. Also, displays tend to lose quality over time. Plants die, colors fade, and dust collects. Some displays are part of an on-going promotional campaign and must be changed to keep up with the campaign sequence.

Summary

Noticeable and attractive displays are important for attracting customers to a business and persuading them to purchase a product or service. Displays are used at fairs, conventions, meetings, demonstration plots, store windows, and many other strategic places. Displays should establish a theme that is clear and easy to remember. Displays should also be updated to provide freshness.

Credits

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