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Management of Working Capital

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BULLETIN 583
JULY 1971

**Management
Working Capital**

**FARM SUPPLY FIRMS OF RETAILERS
WHOLESALE**

AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE UNIVERSITY
BROOKINGS

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management of working capital

By Arthur B. Sogn, research and extension economist

Introduction

New and increased technology has brought about the need for better managers (and for management training) for the smaller businesses of the country. There is also ample evidence that good management and a successful business are not coincidental, but rather continued success depends upon the implementation of several basic management functions. Many managers have voiced a desire for greater knowledge relative to management in their field of endeavor, but find difficulty in leaving their business to obtain such higher levels of understanding. Others new to management also feel a need for some basic information to help get established.

In the past, many businesses had higher margins, less competition, and greater profits so management did not need to use every profit making, cost saving technique to be successful. Competition for nearly every business is now very keen. Competition with other similar businesses, competition from the discount stores, factory-owned stores, chain stores and others who have the advantage of volume efficiencies, make management expertise a necessity.

Objectives

This publication calls attention to certain basic management techniques and alternatives that can reduce costs and increase profits particularly for farm supply firms. These techniques are also applicable to other types of businesses. Not all possible management tools can be discussed here, but a few commonly misunderstood, unused or misused methods will be reviewed. Proper implementation of such methods often makes the difference between profit or loss.

Changing Technology of Management

In the past, one of the best ways to become a manager was to first become recognized in a specialty area and from there advance to manager. For example an individual might be a top salesman of a product or group of products and because of this recognition be elevated to the position of manager because he "deserved it." However, being an excellent salesman does not necessarily qualify a person for a management position. Managers should be hired primarily for their managerial ability. Other considerations such as length of service or knowledge of a specialized area should be secondary. Specialists, on the other hand, should be hired to serve a special need. Seldom, if ever, can a manager properly manage a business

plus function as a specialist in one or several areas of service. The great increase in modern technology has rendered it nearly impossible for a person to adequately perform these dual responsibilities.

Management Responsibilities

While there are many responsibilities of a manager, the purpose of this publication primarily will be concerned with the basic responsibility of managing working capital. Emphasis will be on management of receiving and extending credit; on management of inventory and the granting of discounts; on profit-making margins; and on what the daily records of the company tell about the financial condition and direction of the company's business.

Although this publication is related to farm supply businesses, the techniques are applicable to nearly every retail business whether the legal structure of the business is cooperative, incorporated or unincorporated, partnership or single proprietorship.

Credit Management

Two recent developments have made changes in management of credit necessary.

First, the rapid technological advance has created the need for change in previously acceptable methods of business management. New technology has created demand for new services, new methods and new products. In turn, because of technology there are new opportunities. Technological changes in farming have created a need for many additional items for farm production that the farmer cannot efficiently produce for himself. These include fertilizers, ag chemicals, formula feeds and others. Costs of these production inputs, except labor, have grown very rapidly. Also farm real estate and machinery costs rose by a combined 36.8% in the 10-year period from 1958 to 1968.¹ In this same 10-year period, South Dakota farm production expenses rose 75.7%.² This substantial increase in production expense requires more credit for the farmer and more receiving and extending of credit by the farm supply stores.

¹United States Department of Agriculture, *Handbook of Agricultural Charts 1968*. Agriculture Handbook No. 359, November 1968.

²South Dakota Crop and Livestock Reporting Service, *South Dakota Agriculture 1958*, p. 50, and *South Dakota Agriculture 1968*, p. 58. Sioux Falls, South Dakota.

Second, the enactment, July 1, 1969, of the Truth in Lending Law requires change in credit management. This legislation makes it necessary for a business to have a credit policy, and to make the policy known to customers before extending any credit.

Today, managers of most businesses probably should not concern themselves with whether or not to extend credit, but rather (1) how best to extend credit, (2) how to control credit and, (3) how to account for the cost of credit.

The very nature of the farm supply business of which the grain business is usually a major part, prohibits doing "cash" business in any true sense of the term. Many products supplied for farmers are delivered and unredeemable before the amount of the sale is known, such as fertilizer spread on the customer's land. Because of the wide variety of functions included in farm supply businesses and because the many functions are often under the same management, credit becomes a complex problem. For example, products and services supplied to farmers have a wide divergence of margins ranging at the present from an approximate 3% gross margin on sales for some products (grain generally) to an approximate 50% gross margin on the sale of propane gas. This divergence in margins creates additional credit considerations relative to what type of credit is reasonable and equitable. The low-margin items, such as those on grains, make any "free credit time" virtually an unbearable cost on that commodity. On the other hand, those items that have a substantial margin can more reasonably offer some "free credit time" and perhaps even some discount for prompt payment. Thus, the expected net margin of a commodity should be a major factor in determining if credit can be extended to the purchaser, and how poor a risk (customer) one can accept.

How To Extend Credit

First, develop or adopt a workable credit policy along with a fierce determination to enforce the requirements of that policy. A credit policy can only be effective if it is strictly enforced. If exceptions are made in a credit policy and those exceptions become known to the customers, *the regulations of the policy incorporate those of the exceptions.*

The total amount of credit and length of term it can be offered should be determined by: the amount of working capital available to invest in accounts receivable, and/or the amount of loan capital that can safely be used for accounts and notes receivable. Consideration also must be given to what the competition is doing in extension of credit.

How to extend credit must include an evaluation and classification of those needing credit. To aid in making evaluations and classifying credit customers,

the letter W prefixing six words can be used for association. They are: Who, Why, What, Where, Which and When.

1. **Who** are the principals involved in the proposed credit transactions?
2. **Why** is credit being asked for—convenience or necessity?
3. **What** will the credit purchase do for its purchaser—will it increase earning power?
4. **Where** are the customer's other loans, and loyalties?
5. **Which** type of repayment plan should be used?
6. **When** will the credit purchase be paid, and at which time will the account be past due and subject to litigation.

To evaluate the person applying for or receiving credit, the three R's, Returns, Repayment and Risk, and the 4 C's of credit, Character, Capacity, Capital and Conditions, come to mind, sometimes by plan, sometimes unconsciously.

1. **Returns:** What kind of return is the applicant getting or expecting from his investment? Is he borrowing for income-producing purposes or is he borrowing for personal use?
2. **Repayment:** How will the credit amount be repaid, and from the sale of what commodity?
3. **Risk:** What is the element of risk in his operation, and could he repay in case of adverse circumstances?
4. **Character:** What is this person's over-all character? Does he make an honest effort to pay his obligations? Is he sober, honest, and respected?
5. **Capacity:** Does the person in question have an aptitude for management, or does something always happen to his dreams?
6. **Capital:** Does the applicant have a good financial statement, showing good equity in his business or has he been given inadequate financing by other lending agencies and therefore restricted his potential? Does the applicant have the size unit to be profitable?
7. **Conditions:** What are the general conditions surrounding this particular credit application? Are general economic conditions good in the area now? Are they expected to be good in the future? Has the request for credit originated because of convenience, emergency or because the applicant was refused credit elsewhere? Does the applicant consider extension of credit a privilege and a service and is he willing to pay for that service?

How To Control Credit

Control of credit is simple, yet complex. It is simple because all that is necessary is the establishment and adherence to a credit policy. It is complex because every customer's situation is different, and therefore, should be treated with some special attention.

A credit policy should have the following items included:

1. General conditions of policy
 - a. Time the account is due and payable
Examples: all accounts due and payable before the 10th of the month following purchase, or all accounts due and payable 30 days after purchase.
 - b. Time the account is past due
Example: account is past due if not paid by the 10th of the month following purchase, or within 30 days of date of invoice.
2. Any compensation for prompt payment
Example: a 2% discount may be deducted if payment is received before the 10th of the month following purchase, 30 days of date of invoice or some specific date.
3. Delayed payment
Example: accounts past due will be assessed a service charge of 1% per month or 8% annual interest until paid.
4. Delinquent accounts
 - a. No further credit will be extended, if after 60 days no payment is received, or unless other arrangements are made.
 - b. Legal action will be taken for collection of accounts not paid within 90 days.

The addition of the phrase "unless other arrangements are made" (in 4 a. above) gives license to the collector to accept a promise for an additional delay in payment if the customer will come in and talk about time of payment.

Many variations of the above items may be used in credit policies.

Credit Compliance with "Truth in Lending"³

With the enactment of the "Truth in Lending Law" certain other additions must be included in a credit policy.

The Law (Regulation Z) requires the following items be conveyed at least once in writing to the credit customer before the first transaction, if they are a part of the seller's credit policy.

1. The condition under which a finance charge may be imposed and the period in which a payment can be made without incurring a finance charge.

Example: "All open account balances not paid within 30 days following the billing cycle date (26th of the month) will be assessed a 1% per month finance charge. This finance charge is equivalent to an annual percentage rate of 12%." This tells the customer a finance charge will be assessed after 30 days and if the account is paid within 30 days after the 26th there will be no charge for credit.

2. The method used in determining the balance on which a finance charge is to be made.
Example: "All payments and other credit applied to purchases shall be credited to the oldest purchase first. The balance of the account over 30 days old will be subject to the finance charge."
3. How the actual finance charge in dollars is determined.
Example: If there are charges other than the percentage per month charge on past due accounts, the customer must be informed of these charges. Credit report fee \$5.00, a charge for cashing checks 10c a check, credit life insurance or a minimum charge are examples of other charges that may be included in the finance charge.
4. The periodic rates and the range of balance to which each applies.
Example: If your policy is 1½% per month charge on balances up to \$500 and 1% per month over \$500, this must be so stated.
5. Description of any lien which you may acquire on a customer's property.
6. The minimum payment that must be made on each billing.

How To Account For The Cost Of Credit

There are several costs attributable to extending credit. Most managers are aware of this and justify this cost by the additional business that credit sales are expected to produce. In many cases this reasoning results in good business procedure; however, the manager should be well aware of what the cost is and what can be expected in return.

Many people often talk of "free credit," but from the businessman's standpoint credit is never free. Someone **must** pay for the cost of credit. It must either be paid by the business in lower operating margins or by customer in higher prices, or in the form of interest, a carrying charge or service charge.

Several studies of farm supply firms have indicated the cost of extending credit. For example, Richard Herder found credit cost to be 1.4 cents for each dollar of accounts receivable for each month a feed firm

³Arthur B. Sogn, Truth in Lending, FS 471, Cooperative Extension Service: South Dakota State University, Brookings, South Dakota.

extends credit.⁴ Knudtson and Koller, in their study of credit extension by Minnesota farm supply cooperatives, found that credit costs constituted about 8% of the total operating expense and almost 2% of credit sales.⁵ Eichers, in a study of 30 Midwest retail cooperatives, found credit costs of \$1.34 for each \$100 of credit extended each month and a cost of \$1.74 for \$100 of credit sales.⁶ Credit costs vary from one business to another. Table 1 presents approximate credit costs for a company having an average of \$100,000 per month in accounts receivable, assuming the company had to borrow to extend credit. If it were to use its own capital, with no borrowed money, the cost of extending credit in the example in Table 1 could be decreased, between \$1,000 and \$2,000 per year. In assessing the cost of credit, consideration must be given to what return the money would yield if it were not invested in accounts receivable.

Accounting for the Cost of Credit

It is difficult to calculate the net cost of extending credit because credit cost is sometimes of intangible importance to the total of a business. The importance of credit management to business success can be seen in the following example. If a company were to have a 5% net profit on \$20,000 of sales ($5\% \times \$20,000 = \$1,000$ net margin), a \$1,000 uncollectible account would remove all profit from that \$20,000 worth of sales. If a company were to have a 2% net margin on \$20,000 of sales ($2\% \times \$20,000 = \400 net margin), a \$400 uncollectible account would cancel all profit.

The practice of extending credit, even without loss from bad debts, has a cost that must be analyzed. Assuming a customer charges \$1,000 worth of a commodity on which the business hoped to have a 5% net margin, and the cost of capital financing is 8%, the following analysis can be made.

The cost of capital financing at 8% is .666 for 1% per month. If the account were to remain uncollected for six months without any payment for the credit service, the company's net margin would be reduced from the expected 5% to 1% (6 months \times .666% per month = 3.996 or 4% for the six months) (5% expected margin — 4% cost of financing accounts receivable = 1% net margin). If the account were to remain uncollected for 7½ months, without compensation, all profit would be lost.

In the above example if the expected net margin was 2% and the account was charged for 6 months,

the company would have a **loss** of 2% instead of the expected net profit of 2% (2% expected margin—4% cost of financing accounts receivable = loss of 2%). The analysis on the original \$1,000 credit sale would produce these results:

$$5\% \text{ expected net margin} \times \$1,000 \text{ sales} = \$50 \text{ net margin}$$

$$5\% \text{ less } 4\% \text{ cost of credit} = 1\% \times \$1,000 \text{ sales} \\ = \$10 \text{ net margin after six months}$$

$$2\% \text{ expected net margin} \times \$1,000 \text{ sales} = \$20 \text{ net margin}$$

$$2\% \text{ less } 4\% \text{ cost of credit} = 2\% \times \$1,000 \text{ sales} \\ = \$20 \text{ loss after six months}$$

The above examples illustrate why a different credit policy is sometimes used for different commodities within the same business. Products with a high gross margin on sales do not suffer the same percentage of margin loss for each month a balance is charged to accounts receivable, as do those products with a lower gross margin of profit.

- a 40% gross margin (with money cost at 8% per year) would have a 1.67% loss of margin each month it was charged to accounts receivable.
- a 5% gross margin (with money cost at 8% per year) would have a 13.3% loss of margin each month.
- a 2% gross margin (with money cost at 8% per year) would have a 33.3% loss of margin each month.

Several ways management can reduce the cost of extending credit. It costs approximately \$14,160 per year to maintain an average of \$100,000 in accounts receivable each month. If this amount in accounts re-

Table 1. Estimated Minimum Annual Cost for a Firm Having an Average of \$100,000 in Accounts Receivable Each Month

500 Statements Per Month	
Postage: 6,000 stamps at 8c	\$ 480.00
Supplies: 700 ledger cards at 20c	140.00
700 files at 10c	70.00
6,000 statements at 1c	60.00
6,000 envelopes at 4c	240.00
Interest 8% \times \$100,000	8,000.00
Depreciation on office machines	150.00
Bookkeeper's time 2 hrs/day \times \$2.00 per hour = \$4.00 per day \times 280 days	1,120.00
Manager's time 1 hr/day \times \$5.00 per hour = 5 \times 280 days	1,400.00
Bad debts (0.2%) (200 per mo. \times 12 mos.)	2,400.00
Miscellaneous additions	100.00
Total	\$14,160.00

⁴Richard Herder, "Use of Retail Credit by Retail Feed Firms in Minnesota," Unpublished Master's Thesis, University of Minnesota, 1959.

⁵A. C. Knudtson and E. F. Koller, *Accounts Receivable Credit in Minnesota Cooperatives*, (Station Bulletin #30, Minnesota Agriculture Experiment Station, 1955, Minneapolis, Minnesota).

⁶T. R. Eichers, *Credit Control in Selected Retail Farm Cooperatives*, Area IV, U.S.D.A., Farmers Cooperative Service General Report 57 (Washington, U. S. Government Printing Office, 1959).

ceivable results from a 60 day credit policy, the assessment of a cost covering service charge for all accounts over 30 days could reduce the cost of credit substantially.

Additional savings could be made by a reduction in accounts receivable time. If the outstanding accounts receivable is \$100,000 and the average collection time is 60 days, shortening the collection time to just 50 days would be the same as freeing \$16,666 worth of capital. The effect of freeing this much working capital would reduce interest costs of 8% interest by approximately \$1,333 per year.

There is a limit on how much credit each company should extend based in part on how much working capital a company should allocate to that segment of business. The age of the accounts on the accounts receivable ledger can help determine the amount of credit that can be extended without financial difficulty. The measure of accounts receivable activity is called receivables turnover ratio and may be computed as follows:⁷

$$\frac{\text{Total Credit Sales}}{\text{Outstanding Receivables}} = \text{Receivable Turnover Ratio}$$

For example, using \$100,000 average accounts receivable per month would indicate the firm does about \$1,200,000 worth of credit business per year, therefore, the receivable turnover ratio is 12.

$$\frac{\$1,200,000}{\$100,000} = 12 \text{ receivable turnover ratio}$$

The ratio indicates the accounts receivable turned over 12 times a year or an average of once a month.

Had this same firm made credit sales of \$1,200,000 a year, and had an outstanding receivables balance of \$150,000 the ratio would be 8.

$$\frac{\$1,200,000}{\$150,000} = 8 \text{ receivable turnover ratio}$$

This ratio indicates that accounts receivable turned over 8 times a year or once every 45.6 days:

$$\frac{365 \text{ days}}{8 \text{ turnover ratio}} = 45.6 \text{ days for one turnover of receivables}$$

The higher the turnover ratio, the more efficient is the utilization of capital in the credit function. In the above examples, more credit sales could be obtained using the same amount of capital for financing accounts receivable with the turnover ratio of 12 than with the turnover ratio of 8.

⁷Theodore N. Beckman, *Credits and Collections* (New York: McGraw-Hill Book Company, 1961), p. 634.

Other Sources of Credit

The problems of extending credit might be reduced if the retailer would suggest other sources of credit to the customer and assist him in contacting such sources.

A survey by D. J. Stein,⁸ retail credit director of the Farm Supply Services Inc. of Bloomington, Illinois, indicated if interest rates were equal from all sources of credit: 70.3% of all respondents would prefer to borrow from local banks; 8.5% would rather borrow from a Production Credit Association; and 7.3% would prefer to borrow from suppliers. This study also indicated that farmers are willing to pay for credit after a convenience period.

A study by Hesser, Doll and Sullivan⁹ found that 19% of all nonreal estate agriculture credit was supplied to farmers by merchants and dealers.

Sources of credit for customers are:

1. Local Banks

- a. customer makes arrangements with the bank to pay farm supply firm.
- b. farm supply business, in arrangements with the bank, secures a note from the accepted customer and trades it to the bank for cash without recourse to the farm supply business.
- c. farm supply firm secures a note from customer and trades to the bank for cash. The farm supply assumes contingent liability for the note until it is paid.
- d. conditional sales contract on accepted articles—similar to mortgaging a car with only the car for security and establishment of regular payments.

2. Production Credit Associations

- a. customer may make arrangements with local PCA office.
- b. customer may secure PCA loan from cooperating farm supply business
 - (1) large loans—received on an individual basis—PCA may accept the loan without reservation or may accept it with the farm supplier guarantee.
 - (2) small loans—over the counter credit by cooperating farm supplier.

3. Farm Home Administration

Operating, facility and equipment loans made to some who cannot obtain credit from other sources.

4. Wholesale suppliers

- a. some wholesale suppliers make loans available to farm supply customers on much the

⁸D. J. Stein, "Here's How Customers View Credit," *Farm Store Merchandising*, May 1965.

⁹L. F. Hesser, R. J. Doll, and D. G. Sullivan, *Farm Debt as Related to Class of Farm*, (Kansas City: Federal Reserve Bank of Kansas City, 1964).

- same basis as Production Credit; some notes are secured from the customers by the wholesale supplier with no reservations.
- b. other notes secured by wholesaler with a contingent liability remaining with the farm supply.
 - c. other notes secured by farm supply and delivered to wholesale supplier under either of the above two conditions. This type of loan is usually just available for feed, fertilizer, and agriculture chemicals.
 - d. equipment wholesalers have available conditional sales contracts.
5. Finance companies
Credit available much the same as from banks.
 6. Insurance companies
Insurance companies are generally known for financing agricultural land rather than farm supply, but they are used on occasion for:
 - a. short-term loan on customer's policy.
 - b. pledge of insurance policy as collateral to secure other finance.
 7. Retail farm supply
Some retail farm supply companies have ample capital and do the lending themselves. The interest income is considered as a part of their business.
 8. Commission companies (grain)
Some firms borrow from grain commission companies to finance customer accounts. Commission companies want only to advance money on grain that will eventually be merchandized through their business and do not want to be a source of other inventory credit or as a source of credit to carry accounts receivable.
 9. Credit cards
Credit cards are fast coming into use in all types of businesses, and evidence seems to indicate their increasing importance as a source of credit.

Cash Discount Vs Interest

Scholars and businessmen alike often like to discuss the merits of offering cash discounts instead of charging interest or a carrying charge as a means of credit control. The cash discount method of credit control does have some factors in its favor:

- (1) It provides incentive to the customer to pay cash at the time of purchase.
- (2) It is a reward rather than a penalty, and people generally do not like to be penalized.

Offering cash discounts as a means of credit control has at least three disadvantages however:

- (1) Once a customer passes the cash discount date, he has a tendency to be in no hurry

to pay the account.

- (2) The average farmer has difficulty in taking advantage of cash discounts because of an irregular inflow of cash.
- (3) Businesses selling primarily low-margin items cannot afford to offer substantial cash or volume discounts. This is summarized in Table 2.

The assessment of interest or a carrying charge on past due accounts does have one great justifiable advantage that is having those **who use the credit pay for that service**. The most logical justification for offering a customer a discount is in the case when the firm can save or make money offering it. If by offering a **cash discount** to customers, (1) a firm can save some interest on the money it owes or save on the cost of doing business on credit, (2) or the company will free additional capital to take advantage of discounts offered by suppliers, then a discount equal to or less than what can be saved can be offered to the customer. If by offering a **trade discount** based on volume, a firm can save on handling, warehousing and delivery costs, then a discount can be justifiably offered. If a firm, by offering these discounts, can reap some economies of volume, then this savings could be included in the

Table 2. Additional Sales Needed to Maintain Same Gross Margin in Dollars as Compared to Before a Discount

Percent Gross Margin	5.0	10.0	15.0	20.0	25.0	30.0
Percent Discount	Percent of Additional Sales Needed					
1.0	25.0	11.1	7.1	5.3	4.2	3.4
2.0	66.7	25.0	15.4	11.1	8.7	7.1
3.0	150.0	42.9	25.0	17.6	13.6	11.1
4.0	400.0	66.7	36.4	25.0*	19.0	15.4
5.0		100.0	50.0	33.3	25.0	20.0
6.0		150.0	66.7	42.9	31.6	25.0
7.0		233.3	87.5	53.8	38.9	30.4
8.0		400.0	114.3	66.7	47.1	36.4
9.0		900.0	150.0	81.8	56.3	42.9
10.0			200.0	100.0	66.7	50.0

*For example: If the gross operating margin on a certain product is 20% and the manager offers a discount for cash of 4%, the chart indicates 25% additional sales would be needed to yield the same gross margin in dollars as before the discount.

Table 3. Percent of Sales Needed to Attain the Same Gross Dollar Profit as Before Margins Increase

Percent of Gross Margin Increase of Margin	5.0	10.0	15.0	20.0	25.0	30.0
	Percent of Pre-margin Increase Sales Needed					
1	83.3	90.9	93.8	95.2	96.2	96.8
2	71.4	83.3	88.2	90.9	92.6	93.8
3	62.5	76.9	83.3	87.0	89.3	90.9
4	55.6	71.4	78.9	83.3	86.2	88.2
5	50.0	66.7	75.0	80.0*	83.3	85.7

*For example: If the gross operating margin on a product presently merchandized at a 20% margin could be increased 5%, the chart indicates only 80% as many sales would be needed to attain the same gross margin in dollars as before margin increase.

amount of the discount offered. Other reasons for offering a discount must be analyzed for their cost and contribution to the total good of the firm.

Some types of discounts offered to customers that might be justifiable on the basis of contribution to profit are:

- (a) **Cash discount**—discussed above.
- (b) **Pre-payment discount**—a discount given because of certain benefits derived from receiving payment in advance of delivery.
- (c) **One sale or quantity discount**—a discount based on certain savings by selling one large order to a customer rather than several small orders.
- (d) **One delivery discount**—a discount given because of cost savings from making one large delivery rather than several small ones.
- (e) **Keep full discount**—a discount offered because of savings of filling the customers storage while a delivery is being made in his area, rather than making a special trip for his order.
- (f) **Pre-season discount**—a discount based on the advantages of making a firm sale in advance of the products normal time of use.
- (g) **Minimum delivery or service discount**—a discount given on a related service to a product, but not on the product price.
- (h) **Annual volume discount**—a discount given for a customer or customers that make a pre-determined amount of purchases or sales during a fiscal year.

There are many types of discounts that may be offered to customers, but only a limited number can be justified on a dollar and cents contribution to the business.

Let us assume a firm had \$100,000 of cash sales of a product on which they hoped for a 20% gross margin, and a resulting gross profit of \$20,000. On these cash sales the firm offered its customers a cash discount of 4%. The total discount would be \$4,000 ($4\% \times \$100,000 = \$4,000$). The firm would have to increase its sales by 25% to have the same gross margin as before the discount.

20% margin x \$100,000 sales = \$20,000 gross margin
16% margin x \$125,000 sales = \$20,000 gross margin

A useful formula for figuring how many additional sales are needed after a given discount is as follows:

$$X = \frac{C \times 100}{M - C}$$

X = Percentage of sales needed
C = Price cut or discount offered
M = Gross margin on sales

$$\begin{aligned} X &= \frac{4\% \text{ discount} \times 100}{20\% \text{ margin} - 4\%} \\ &= \frac{400}{16} \text{ or } 25\% \text{ additional sales needed} \end{aligned}$$

Table 3 is a counterpart of Table 2 showing what percentage less sales a firm would need to attain a certain gross profit in dollars if it increased its margin.

One formula to calculate the percent of the original sales that would be needed to attain the same gross profit after an increase in margin is as follows:

$$X = \frac{M}{M + \Delta M}$$

X = Sales needed to maintain some gross margin

M = Beginning margin

Δ = Change in margin

$$\begin{aligned} X &= \frac{20\% \text{ margin}}{20\% \text{ margin} + 5\% \text{ change}} \\ &= \frac{20}{25} \text{ or } 80\% \text{ as many sales needed} \end{aligned}$$

A similar formula to arrive at the same conclusions as Table 3 but in this case to find what percentage of sales loss one could absorb and still maintain the same gross profit in dollars after a margin increase follows:

$$X = \frac{100 - M}{M + \Delta M}$$

X = Percent of decrease in sales

M = Beginning margin

ΔM = Change in margin

$$\begin{aligned} X &= \frac{100 - 20\% \text{ margin}}{20\% \text{ margin} + 5\% \text{ change}} \\ &= 100 - \frac{20}{25} \text{ or } 100 - 80\% \\ &= 20\% \text{ decrease in sales could} \\ &\quad \text{be absorbed without loss} \\ &\quad \text{in gross margin dollar} \end{aligned}$$

The above charts on discounts are arithmetic charts and do not reflect other factors which may reflect sales and profits at given prices. Examples of such other factors that may determine the profitability of adding to the operating margin could be competitors' prices and substitute products effect on sales.

Economics of Accepting or Rejecting Cash Discounts for Prompt Payment

The decision of whether to accept a cash discount offered by a supplier for prompt payment of an invoice, or whether to forego the discount and use the money until the invoice is due, is a management deci-

sion which must be made many times a year. This decision could be made easier and more often correctly if the amount of the discount could be related to what interest rate the discount represents.

Assume a department manager buys \$10,000 worth of merchandise a week on which the supplier offers the following terms (2/10/n30). The symbol 2/10/n30 means a 2% cash discount is offered if the amount is paid within 10 days of date of invoice. If the discount period of 10 days is not accepted, then the net amount of the invoice is due in 30 days. If one should choose to decline the discount and use the money 20 days until the invoice is due, what rate of interest would he be paying for the use of the money? The following formula will indicate the rate of interest represented in a discount.

$$D \times \frac{WY}{W} = 1$$

D = Percent of discount

WY = days in a year

W = days use of money

Thus in the above example, declining the discount would be to use the money at a rate of 36.5% interest.

$$\begin{aligned} & 2\% \text{ discount} \times \frac{365 \text{ days}}{20 \text{ days use of money}} \\ & = 36.5\% \text{ equivalent interest rate} \end{aligned}$$

The less time there is to use the money, the higher the interest rate if the percentage of the discount remains constant (2/15/n30).

$$\begin{aligned} & 2\% \text{ discount} \times \frac{365 \text{ days}}{15 \text{ days use of money}} \\ & = 48\% \text{ equivalent interest rate} \end{aligned}$$

Determining Gross Margin

A very important aspect of management is the margin needed on sales in order to achieve a profit. There are several methods of arriving at different margins. Failure to use the proper method could have disastrous results. For example, when analyses indicate the need for a 15% gross margin or profit on sales, this margin cannot be attained by adding 15% to the cost price of the item.

If a 15% gross margin on sales is needed on a unit that costs \$100, the selling price could be computed in the following manner:

$$(100\% - 15\% \text{ desired margin} = 85\%)$$

$$\$100 \text{ cost} \div 85\% \times 100\% = \$117.65 \text{ selling price needed for a 15\% gross margin on sales}$$

The \$17.65 markup over cost is 15% of the selling price of \$117.65.

If one were to add 15% margin to the \$100 cost, the markup would be \$15.00 (15% x \$100 = \$15). A \$15 markup is 12.7% of the selling price of \$117.65 shown above to attain 15% gross margin on sales. The 2.3% difference (15% - 12.7% = 2.3%) in the two methods of pricing discussed may seem insignificant to the inexperienced person, but this 2.3% difference multiplied times \$500,000 in annual sales would amount to \$11,500 difference in gross profit.

Table 4. Table of Equivalents Gross Margin as it Relates to Selling Price Expressed as a Percent of Cost

Gross Margin on Sales Desired	Mark-up above Cost Needed	Gross Margin on Sales Desired	Mark-up above Cost Needed
5.0	5.3	28.0	38.9
7.5	8.1	30.0	42.9
10.0	11.1	31.0	45.0
12.0	13.7	32.0	47.1
13.0	15.0	33.0	49.3
14.0	16.3	34.0	51.6
15.0	17.7	35.0	53.9
16.0	19.1	38.0	58.8
17.0	20.5	39.0	64.0
18.0	22.0	40.0	66.7
19.0	23.5	42.0	72.5
20.0	25.0	45.0	81.9
22.0	28.2	47.0	88.8
25.0	33.3	50.0	100.0

To determine the markup needed for a gross margin which is not shown in Table 4 the following formula may be used:

$$\frac{GM}{CG} = MU$$

GM = Gross margin desired in percent

CG = Cost of goods in percent (if the margin desired is 30% then the cost of goods would be 70%, etc.)

MU = Markup in percent

$$\frac{30\% \text{ margin desired}}{70\% \text{ cost of goods}} = 42.9\% \text{ markup above cost needed}$$

Cost of a "Loss Leader"

Sometimes a sales "gimmick" or some special attraction is used to encourage new customers or to make buying more attractive to old customers. Occasionally a product is offered for sale at below cost to create this attraction for business. Another common practice is to offer some particular service free or below cost to encourage customer participation. This type of promotion should be carefully analyzed in terms of its real cost. Often the total cost is much greater than expected.

If a loss leader is to be used, a low margin item would tend to be less costly to the business than would a high margin item. Not only is the amount of antici-

pated loss of concern but also the cost of doing business necessary to make up for that loss. For example, let us assume a company is providing a service that costs \$5,000 a year. If it is the intention to repay this cost with additional business, then the cost of doing that additional business must also be charged to the profit-costing service. It is estimated for example, that it is necessary to handle approximately 250,000 bushels of grain, 250,000 gallons of bulk petroleum or 4,166,600 pounds of milk in order to attain a net profit of \$5,000.

Assuming a buying margin of five cents a bushel for grain, of which two cents is net profit, and three cents is cost of handling, then handling an additional 250,000 bushels of grain would make up for the \$5,000 loss ($2c \times 250,000 \text{ bu.}$).

Assuming a net profit of two cents a gallon on bulk gasoline and a cost of two cents a gallon; one must sell 250,000 gallons of bulk gasoline ($2c \times 250,000 \text{ gal.}$) to make up for the loss of \$5,000.

Assuming a net profit of twelve cents a hundredweight on milk, and a cost of forty-three cents a hundredweight for handling and processing milk, a dairy would need to handle ($12c \times 41,670 \text{ cwt.} = \$5,000$) 41,670,000 pounds of milk to make up the loss of \$5,000.

Remember that the loss of revenue from a loss leader or from a service at below cost must be repaid with net margins and not gross margins.

Management of Inventories

Maintaining an adequate inventory is also an important consideration for the efficient manager, as many sales can be lost by not having a product available when the customer wants it. However, the cost of excessive inventories must be of equal concern.

Assume that the average annual cost of carrying inventory for a year is about \$200 per \$1000 worth of inventory. Of this amount, about \$80 is attributable to interest expense and the balance is allocated to insurance, taxes, handling, shrinkage, obsolescence, storage and facilities. On the basis of the above estimates, a firm with an excess inventory of \$30,000 would incur additional operating cost of \$6,000 ($\$200 \times 30,000 \text{ inv.}$) per year.

Turnover

Inventory turnover is a ratio analyses important in inventory management. This ratio is the cost of goods sold divided by the average inventories for a certain period.

For example, assume a yearly cost of sales figure of \$142,900, and an average inventory for the year of \$85,200. The average inventory figure is obtained by adding each monthly inventory and dividing by 12 months. The cost of goods purchased from a supplier, usually includes the transportation costs of getting the product to one's place of business.

In the above example the annual turnover rate is as follows:

\$142,900 cost of sales

\$85,000 average inv.

= 1.68 annual inventory turnover rate

In other words, this inventory turns over 1.68 times a year. The rate of turnover varies from commodity to commodity, and from season to season. For example, gasoline stations may have an inventory turnover ratio of 20, farm supply stores a ratio of 12, fertilizer 5 and lumber 1. These variations must be taken into account in calculating the inventory carrying costs. John A. Harling¹⁰ explains the importance of inventory ratios this way. If an inventory turns only once a year, all costs involved in carrying the inventory during this period will have to be recovered from this one complete sale of the inventory. However, if the inventory turns 14 times a year only one-fourteenth of these costs need to be recovered from each sale of inventory.

If inventory turnover is low, high unit inventory carrying costs will occur, necessitating high margins. Unsatisfactory turnover ratios can be corrected by increasing sales or decreasing inventory whichever seems most feasible. Too great an inventory turnover may suggest too small an inventory. An inadequate inventory could cause a business to lose sales and consequently profits.

Managing Cash

Many of the businesses that survived the depression years wanted their managers to maintain cash on hand to meet responsibilities plus a little contingency fund. Now that businesses operate on more borrowed capital and in many cases small margins, it is the responsibility of the manager to also manage money. Excess cash is not now considered in the interest of good business as it was in the past.

There are many kinds of short-term investments available in the money market. There are Federal government bonds, short-term certificates and notes, certificates of deposit, pre-payments, and interest bearing credit balance with commission companies among others. Some local banks are experimenting with a credit-debit balance with local businesses. The bank pays interest when there is a credit balance and charges when there is a debit balance. The interest rate must be heavily in favor of the bank under such an arrangement. However, for a company borrowing on the average of \$150,000 a year an overall savings of 2% would add \$3,000 to the profits. Having \$75,000 of excess cash on hand for the equivalent of two months a year would cost a company \$1,123 in profits a year if there was an existing 9% loan or \$750 if it could have been invested at 6%.

¹⁰John A. Harling, "Analyzing A Cooperative Business," Omaha Bank for Cooperatives, Omaha, Nebraska.

Understanding Company Records

A manager should not execute any of the actual accounting or business transactions, but he should know what the daily, monthly and annual records indicate. The most common method of measuring and analyzing progress is by use of **ratios**. A ratio is a percentage figure representing the comparison of one dollar amount with another dollar amount from the company records. These ratio comparisons are used to compare certain items within the business, and also to compare the ratios of one business to some accepted norms.

Ratios are a measure of many aspects of business, including profitability, solvency, liquidity, and the current operating condition. Ratios measuring accounts receivable and inventory activity have been discussed in earlier paragraphs. There are many other important ratios in business management.

Ratio of Current Assets to Current Liabilities

This is known as the current ratio. It is obtained by dividing the current assets of the company (those that can quickly be turned to cash) by the current liabilities (those that are due within one year).

Example:

$$\frac{\$400,000 \text{ Current Assets}}{\$200,000 \text{ Current Liabilities}} = 2 \text{ Current Ratio}$$

A current ratio of 2 or more is usually considered good.

Ratio of Current Debt to Tangible Net Worth

This ratio contrasts the total debt of the company with the total ownership (net worth) of the company. Growth of net worth in relation to total debt is considered essential.

Example:

$$\frac{\$140,000 \text{ Liabilities}}{\$228,000 \text{ Tangible Net Worth}} = 61.4 \text{ Ownership}$$

This ratio could also help determine the type of credit policy the company could afford to offer, and how much capital is available to add new services.

Ratio of Sales to Expense

This ratio is important in the determination of gross margins needed to make various enterprises profitable. If the ratio of one company's sales to expense is too low compared with a norm for that type of business, than either the margins are too low, or expenses are too high or both.

Example:

$$\frac{\$1,000,000 \text{ Sales}}{\$100,000 \text{ Expenses}} = 10 \text{ to } 1 \text{ Ratio of Sales to Expenses}$$

Ratio of Net Profits to Investment

This is a ratio to tell whether the entire business venture is worth the time, energy, and finances it takes to keep it in operation.

Example:

$$\frac{\$10,000 \text{ Net Profit}}{\$300,000 \text{ Investment}} =$$

3.336 Ratio of Net Profit to Investment

For a business only concerned with making a profit, the ratio of net profits to investment must be consistently above the current interest rate available to investors. If this ratio is consistently below the current interest rate one could obtain, then the investment could be sold and the proceeds invested at interest for more profit than operating at present margins. There may be a business willing to operate at a ratio less than current interest rates if it serves a purpose other than making a profit from a particular enterprise. For example, one enterprise used primarily to enhance another enterprise may be continued at a low ratio of net profit to investment.

There are other ratios of importance, but perhaps not as important in management decisions relative to achieving the highest levels of profits possible.

Summary and Conclusions

Management has become a specialized science that makes the difference between success or failure of a business. There is a great need for training management especially in the farm supply business, but many managers of these and other small businesses cannot or do not take the needed time for proper training. Thus, the training must come to them through publications, radio, TV and special meetings. The small businessman needs management expertise to compete with discount stores, factory owned stores, chain stores and others that have the advantage of volume efficiencies.

New technology and new ideology have made credit a very important part of the farm supply business. Managers should therefore not spend energy trying to avoid the use of credit but should rather dedicate their efforts on how to make credit profitable by learning: (1) how best to extend credit, (2) how to control credit, and (3) how to account for the cost of credit.

To be successful in the management of a business one must determine the margin on sales that will assure a profit item, and control costs so that goal may be achieved. Areas where insufficient analyses may limit or restrict profits are in determining the gross margin on sales, the cost to other segments of the business from a loss leader or a service at below cost, and in the management of monies and inventory.

Profits can be made where they are not now enjoyed if managers have or acquire the knowledge and take the time to manage. Profits must be realized if a business is to grow, expand and continue to serve the customers. Ratio analysis is one of management's strongest tools in helping to evaluate and control the business.