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# Operating Expenses Of Cooperative Exchanges And Elevators

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COLUMBIA, MISSOURI

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# Operating Expenses Of Cooperative Exchanges And Elevators<sup>1</sup>

HERMAN M. HAAG

Local cooperative associations are an important part of the marketing system for farm products in this state. It has been estimated that, on the basis of value, approximately one-sixth of the eggs, one-fifth of the poultry, one-eighth of the butterfat and one-fourth of the wheat marketed in this state in 1935 were sold through local cooperatives. In addition, large quantities of supplies were handled by cooperatives for farmers. Feed sales of local cooperative exchanges and elevators in 1935 were estimated at \$7,100,000, which was at least one-fourth of the total sales of such feeds in Missouri in that year. Figures are not available for total sales of other products or total purchases of other supplies by farmers in 1935, but the proportion of several other farm products and supplies handled through cooperatives is thought to be substantial. The total volume of business of the 410 local cooperatives operating in Missouri in 1935 amounted to \$31,500,000.

Cooperative exchanges and elevators are by far the largest single group of associations in Missouri. In 1935, they were more than three-fourths of the number of cooperatives and did more than 90 per cent of the local cooperative business in this state.

When farmers trade with private dealers, the prices being paid for farm products and the prices at which supplies are being sold are their only concern. When business is done with their cooperative, however, farmers have not only an interest in the prices at which they sell or buy but also in the operating costs of their cooperatives. If a cooperative has costs lower than those of private competitors and is able to sell farm products and buy supplies just as effectively as private dealers, its farmer-patrons may receive patronage dividends which, in effect, increase prices received for their products and reduce prices paid for supplies.

Since operating costs of cooperatives affect farmers' returns and since the cooperative exchanges and elevators are the most important group of local associations, farmers undoubtedly are interested in the level of operating costs of exchanges and elevators and in

<sup>1</sup>The data for this study were obtained from Missouri cooperative exchanges and elevators whose cooperation the writer appreciates and acknowledges. Mr. Edward G. Schiffman, now assistant professor of agricultural economics, Alabama Polytechnic Institute, rendered valuable assistance in the collection and preliminary tabulation of data used in this study. The advice of R. J. Rosier, Secretary, Missouri Farmers' Association, relative to the content and arrangement of the survey schedule, the assistance of the Cooperative Division of the Farm Credit Administration in collecting the records, and the aid of the National Youth Administration for clerical assistance in tabulating the data, are greatly appreciated.

methods by which such costs can be reduced. This publication is concerned with such an analysis of costs and of factors causing variations in costs.

### AVERAGE EXPENSES OF MISSOURI COOPERATIVES

The operating expenses of 161 cooperative exchanges and elevators amounted to \$6,211 per association in 1935, (Table 1). Since

TABLE 1.—OPERATING EXPENSES, 161 ASSOCIATIONS, 1935.

Class of expense	Expenses		Class as Per Cent of Total
	Per Association	Per \$100 of Sales	
Management and labor	\$3,167	\$3.05	51.0
Fixed property	1,266	1.22	20.4
General	636	.61	10.2
Inventory	369	.36	5.9
Credit	316	.30	5.1
Promotion	116	.11	1.9
Miscellaneous	42	.04	0.7
Total	\$5,912	\$5.69	95.2
Net Truck*	299	.29	4.8
Grand total	\$6,211	\$5.98	100.0

\*Net truck expense is the net result after income from trucking was deducted from truck expense.

sales averaged \$103,914 per association, the cost of doing business was approximately \$6 per \$100 of sales. This information was obtained from an analysis of financial data collected from these associations by means of a survey schedule. This schedule for each association was filled out by an enumerator from the association's audit report for 1935 and other financial records, and from answers to questions asked the manager of the association. Only those records which provided a detailed classification of expenses for a complete fiscal year were used in this study. Although a few associations with fiscal years ending other than on December 31, 1935, are included, all data, for convenience in making statements, have been regarded as for the year, 1935.

### Comparison With Other Retailers

Judging from costs for cooperatives and private dealers in other states shown by similar studies, average expenses for Missouri cooperatives of only \$5.98 per \$100 of sales were relatively low. In 1926, the average cost of doing business in 83 private feed stores in New York was \$10.40 per \$100 of sales.<sup>2</sup> In 1929, the operating expenses of 44 feed cooperatives in New York were \$6.20 per \$100 of sales.<sup>3</sup> It costs 10 Virginia cooperatives in which feed sales were

<sup>2</sup>Powell, Whiton, *Some Factors Affecting the Cost of Operating of Retail Stores*, Cornell Univ. Agr. Exp. Sta. Bul. 505, p. 9, Table 5.

<sup>3</sup>Harper, F. A., *Cooperative Purchasing and Marketing Organizations in New York State*, Cornell Univ. Agr. Exp. Sta. Bul. 544, p. 51, Table 52.

50 percent or more of total sales, \$7.70 per \$100 of sales for operating expenses in 1930.<sup>4</sup> The fact that these other studies were for earlier years makes the comparison more favorable to Missouri cooperatives since data from a number of Missouri cooperatives indicate that their average cost of doing business was lower from 1926 to 1930 than in 1935.

The conclusion that Missouri cooperative associations have low operating expenses is further emphasized by data collected and compiled by the Bureau of the Census on costs of operation of retail establishments. The costs reported to the Bureau presumably do not include certain estimated non-cash costs which are included in the above figures and therefore are not strictly comparable with the more complete costs shown above. Among such non-cash costs would be interest on net worth. Nevertheless, the Census data do give the basis for further comparison of the economy of Missouri cooperatives with that of other cooperatives and of private concerns.

In 1929, expenses per \$100 of sales averaged \$5.60 for 57 cooperative buying associations and \$5.36 for 56 cooperative stores in Missouri towns of less than 10,000 population, (Table 2). For all such cooperatives in the United States, average expenses were \$9.97

TABLE 2.—OPERATING EXPENSES OF COOPERATIVES AND OF SPECIFIED FEED RETAILERS, MISSOURI AND UNITED STATES, 1929.

Kind of retailer and location	Number of retailers	Sales per retailer	Expenses per retailer	Expenses per \$100 of Sales
<b>Cooperative retailers, Missouri*</b>				
Buying associations . . . . .	57	\$96,848	\$5,423	\$5.60
Stores . . . . .	56	82,452	4,418	5.36
All . . . . .	113	\$89,714	\$4,925	\$5.49
<b>Cooperative retailers, United States*</b>				
Buying associations . . . . .	566	\$72,368	\$5.333	\$7.37
Stores . . . . .	1,143	66,522	6.635	9.97
All . . . . .	1,709	\$68,458	\$6,204	\$9.06
<b>Specified feed retailers, Missouri†</b>				
Feed stores . . . . .	572	\$51,396	\$4,222	\$ 8.22
Coal and feed stores . . . . .	208	49,738	6,075	12.22
Feed stores with groceries . . . . .	295	29,557	3,224	10.91
All . . . . .	1,075	\$45,081	\$4,307	\$ 9.55
<b>Specified feed retailers, United States†</b>				
Feed stores . . . . .	9,953	\$48,257	\$5,221	\$10.82
Coal and feed stores . . . . .	4,093	70,292	9,297	13.23
Feed stores with groceries . . . . .	7,127	28,797	3,492	12.13
All . . . . .	21,173	\$45,966	\$5,427	\$11.81

\*Adapted from *Cooperatives as a Factor in the Distribution of Agricultural Products*. C. D. Bohannon, Bureau of the Census, U. S. Department of Commerce. Includes cooperatives in towns of less than 10,000 people only.

†Adapted from *Retail Distribution, Fifteenth Census of the United States*, Bureau of the Census, U. S. Department of Commerce.

<sup>4</sup>Talbot, Ransom C., *An Economic Study of Cooperative Buying and Selling Among Farmers in Virginia*, Va. Agr. Exp. Sta. Bul. 286, p. 32, Table 24.

and \$7.37, respectively, per \$100 of sales. Thus, expenses of the 113 Missouri cooperatives were \$3.57 per \$100 of sales less than those of the 1709 such cooperatives in this country. Sales of Missouri cooperatives averaged somewhat larger than the average for the entire United States.

The Missouri cooperatives reported by the Census Bureau are undoubtedly associations of the type included in this study. If so, they were primarily feed stores which engaged in various other sidelines such as the handling of produce, grains, groceries and other farm supplies.

Costs of Missouri cooperatives, then, were also below those of private concerns doing a similar type of business. Average expenses for farm supply retailers in Missouri varied from \$8.22 per \$100 of sales for strictly feed stores to \$12.22 for coal and feed stores, and averaged \$9.55 for the 1,075 stores handling a relatively large volume of feed. Thus, expenses of cooperative feed stores per unit of sales were only 57 per cent as great as the average for all feed retailers in Missouri. Since the latter included both private and cooperative feed retailers, the difference between expenses of cooperative and private retailers was even more favorable to cooperatives than the above figures show. Costs for such feed retailers in the United States averaged \$6.32 per \$100 of sales higher than for Missouri cooperatives. Hence, expenses of Missouri's cooperative feed stores were only 46 per cent of the average for all feed retailers reported for the entire country.

The average expenses reported by the Bureau of the Census for 1929 agree quite closely with costs in 1935 reported in this study of 161 associations. If the \$696 of interest charged for the use of net worth is deducted from the \$6,211 of expenses shown in this study, the remaining \$5,515 will amount to only \$5.31 per \$100 of sales, compared to the \$5.49 reported by the Census Bureau. The associations reported by the Census Bureau had a somewhat smaller average volume of sales than those included in this study.

#### **Classes of Expense**

Of the total operating expenses of the 161 Missouri associations used in this study, more than one-half was for labor and management; one-fifth for fixed property costs; and 10 per cent for general expense, (Table 1). Inventory expense and credit expense amounted to 5 per cent each. Net truck expense was nearly 5 per cent of the total.

This classification of expenses has some limitations in that labor

and management expense includes the wages of truck drivers and helpers which ordinarily would be included as truck expense. Since the primary purpose of the schedule used in this study was to obtain information as to the status of cooperation among farmers in Missouri, it was not burdened with provisions for the detailed information necessary to classify costs by functions.<sup>5</sup> Thus, it did not provide for a breakdown of labor and management expense to the various functions other than buying and selling. For the same reason credit expense includes no expense for the labor and management employed in recording and collecting credit accounts; and fixed property expense, no charge for labor used in repairing buildings, machinery and equipment.

### Allocation of Certain Expenses

Even for the above classification, it was necessary to allocate certain items of expense, as given in operating statements of the associations, among several different classes of expense. Such items were depreciation, insurance, taxes, repairs and interest. Their allocation is given in Table 3.

TABLE 3.—ALLOCATION OF CERTAIN ITEMS OF EXPENSE TO SPECIFIED CLASSES OF EXPENSE. 161 ASSOCIATIONS, 1935.

Item of Expense	Class of Expense					Total	Item as Per Cent of Total Operating Expenses
	Fixed Property	Truck	Inventory	Credit	General		
	Average expense per association						
Depreciation .....	\$539	\$209	\$...	\$...	\$...	\$748	12.0
Interest .....	372	35	234	124	84	849	13.7
Insurance .....	121	15	89	...	14	239	3.8
Taxes .....	97	3	46	...	47	193	3.1
Repairs .....	89	2	...	...	...	91	1.5
Total .....	\$1,218	\$264	\$369	\$124	\$145	\$2,120	34.1

Depreciation, as estimated by the association, was allocated between fixed property and delivery equipment on the basis of a schedule of depreciation available in the audit report of the association for 1935. All buildings, machinery and equipment other than motor vehicles and trucks were classified as fixed property.

Taxes were distributed according to the property upon which the tax was paid. Thus real estate and personal property taxes, except that on delivery equipment was allocated to fixed property expense. Truck taxes and licenses, not already charged to truck expense, were allocated to that expense. Most associations had recorded taxes and licenses on trucks as truck expense, which accounts for the small amount of this expense among taxes and

<sup>5</sup>Schiffman, Edward G. and Herman M. Haag, *Farmers' Cooperative Marketing and Purchasing Associations in Missouri*, Mo. Agr. Exp. Sta. Bul. 339, p. 5.

licenses in Table 3. General licenses and taxes, such as occupation taxes for merchants in certain towns; cream, egg and fur licenses; and feed tonnage fees or taxes, which are overhead costs of a mercantile business, were regarded as general expense.

Repairs were distributed according to whether on trucks or fixed property. Most truck repairs had been recorded by the association as truck expense and not as repairs.

Insurance expense was allocated according to property covered. The cost of insurance on buildings, machinery and equipment other than trucking equipment was allocated to fixed property expense; on stocks of goods, to inventory expense; and on trucks and cargoes, to truck expense. Most associations recorded the cost of insurance on delivery equipment directly as truck expense rather than as insurance which accounts for the relatively small item for truck insurance in the above table. All other insurance expense such as that for burglary insurance on cash and safe, and employers' liability insurance was regarded as general expense. The amount of this latter was small.

Interest expense was the only item of expense which was altered significantly from that given in the association's records. Associations record as interest expense only that actually paid by them. Thus, associations charge no interest on capital obtained or held in the form of net worth. To make expenses comparable among associations, however, it is necessary that interest also be charged on net worth. Interest expense in this publication, therefore, is the amount of interest paid by the association and interest at 5 per cent on its average net worth at the beginning and the end of the year. Of the total interest expense, the net amount paid by the associations averaged \$153 and the interest charged for the use of the net worth averaged \$696 per association.

Interest expense was allocated to fixed property, truck, and inventory expenses at 5 per cent on the average of the values of these properties at the beginning and end of the year. Interest at 5 per cent on the amount of accounts and notes receivable outstanding at the end of the year was distributed to the credit expense. The balance of the interest expense, if any, was regarded as a charge for the use of working capital and was allocated to the general or overhead expense.

The importance of certain items of expense, not so evident when distributed among several classes of expense, is pointed out in Table 3. For example, interest was 13.7 per cent of total operating expenses in 1935; depreciation, 12 per cent; insurance, 3.8 per cent;

and taxes, 3.1 per cent. Insurance and taxes were even greater than these figures indicate because some of the expense for these items was recorded as truck expense. Also, the expense for taxes did not include sales taxes collected from patrons by the associations.

### Management and Labor Expense

Management and labor expense amounted to \$3,167 or more than one-half of operating costs in 1935. Nearly one-third of this expense was for manager's salary and nearly two-thirds for wages of other employees, (Table 4). Directors' fees averaged \$64 per association or 2 per cent of this expense.

TABLE 4.—MANAGEMENT AND LABOR EXPENSE, BY ITEMS, 161 ASSOCIATIONS, 1935.

Item of Expense	Expense		Item as Per Cent of Total
	Per Association	Per \$100 of Sales	
Manager's Salary .....	\$1,040	\$1.00	32.8
Employees' Wages .....	2,063	1.99	65.2
Directors' Fees .....	64	.06	2.0
Total .....	\$3,167	\$3.05	100.0

The average salary of managers was \$86.81 per month for the full twelve months of the year, (Table 5). Wages of employees

TABLE 5.—NUMBER OF PERSONS EMPLOYED AND AVERAGE SALARY AND WAGE PAID, 161 ASSOCIATIONS, 1935.

Position	Months Employed	Man-equivalents		Average Salary and wage per month
		Number	Per Cent	
Manager .....	12.0	1.0	23	\$86.81
Employees .....	40.4	3.4	77	51.00
All .....	52.4	4.4	100	\$59.18

averaged \$51.00 per month. Since the employee-months amounted to 40.4 per association, the associations furnished an equivalent of full-time employment for 3.4 persons during the year. Including the manager, the total employees of the associations amounted to 4.4 persons per association. Thus, on the average, the manager was nearly one-fourth of the total workers of associations in 1935. The average salary and wage was \$59.18 per month.

### Fixed Property Expense

Fixed property expense totaled \$1,299 per association against which rent income of \$33 was credited, making the net expense \$1,266. This amounted to 20 per cent of total operating expenses and was \$1.22 per \$100 of sales. Of the total fixed property expense, depreciation accounted for more than two-fifths, interest for more than one-fourth and insurance nearly one-tenth, (Table 6). Taxes, repairs and rent, each, were approximately 7 per cent of the total.

TABLE 6.—NET FIXED PROPERTY EXPENSE, BY ITEMS, 161 ASSOCIATIONS, 1935.

Item of Expense	Expenses		Expenses as Per Cent of the Value of Fixed Property	Item as Per Cent of Total
	Per Association	Per \$100 of Sales		
		Cents		
Depreciation .....	\$ 539	51.8	7.2	41.5
Interest .....	372	35.8	5.0	28.7
Insurance .....	121	11.7	1.6	9.3
Taxes .....	97	9.3	1.3	7.4
Repairs .....	89	8.6	1.2	6.9
Rent .....	81	7.8	1.1	6.2
Total .....	\$1,299	125.0	17.4	100.0
Less rent income ..	33	3.2	.4	2.6
Net Expense .....	\$1,266	121.8	17.0	97.4

Depreciation was a non-cash expense which had been estimated by the association as a certain percentage of the value of its property. The most common rate of depreciation on buildings was 5 per cent of their original value or cost. The rate varied, however, with the kind of building and its condition. Many associations had more than one-half of the original value of their buildings charged off in depreciation by the end of 1935. The most common rate of depreciation on machinery and equipment was 10 per cent of cost.

Net fixed property expense averaged 17 cents per dollar of fixed property. Of this, depreciation amounted to 7.2 per cent of the average value of fixed property for 1935 and interest to 5.0 per cent. The other four items of expense varied from 1.1 to 1.6 per cent of the average value. The average value of fixed property for 1935 was \$7,448 per association.

#### General Expense

General expense, which might also be termed overhead expense, amounted to \$636 or 61.2 cents per \$100 of sales. It was 10 per cent of total operating costs in 1935. Of this general expense, lights, power and water accounted for one-fourth and office supplies, postage and printing for nearly one-fifth, (Table 7). Interest

TABLE 7.—GENERAL EXPENSE, BY ITEMS, 161 ASSOCIATIONS, 1935.

Items of Expense	Expense		Item as Per Cent of Total
	Per Association	Per \$100 of Sales	
		Cents	
Lights, power and water .....	\$175	16.8	27.5
Office supplies, postage and printing ..	123	11.9	19.3
Interest .....	84	8.0	13.2
Telephone and telegraph .....	73	7.0	11.5
Taxes .....	47	4.6	7.5
Auditing and bond .....	42	4.0	6.6
Plant supplies .....	41	3.9	6.4
Fuel and ice .....	30	2.9	4.7
Insurance .....	14	1.4	2.2
Protection .....	7	0.7	1.1
Total .....	\$636	61.2	100.0

was 13 per cent of the total. This latter was the balance of the total interest expense remaining after interest at 5 per cent on

the average value of fixed property, trucks, and inventory and on the amount of accounts and notes receivable at the end of the year had been distributed to corresponding classes of expenses as shown in Table 3. Telephone and telegraph expense amounted to \$73 per association in 1935. The telephone is used extensively by managers as a means of keeping informed about prices to be paid for farm products.

Taxes and licenses included city and state licenses paid in order to engage in the mercantile business. Among such were egg licenses, cream licenses, feed tags, fur licenses and city merchants licenses.

Auditing and bond included amounts paid for the audit of accounts at the end of the year and for surety bonds for the manager and other employees. Usually only the manager was bonded. Plant supplies included paper sacks, cream testing supplies and similar items.

Some associations carried burglary insurance on their safe and contents. A few carried employers' liability insurance. These and a few other similar items of insurance expense not elsewhere classified made up the general insurance expense. Protection expense was for nightwatchmen employed by some associations.

### Inventory Expense

Inventory expense averaged \$369 per association and was nearly 6 per cent of expenses. It amounted to 35.5 cents per \$100 of sales and included interest on average inventories, insurance and taxes. The taxes included were ad valorem taxes based on stocks of goods held by merchants. Of total inventory expense, nearly two-thirds was interest; one-fourth, insurance; and one-eighth, taxes (Table 8). Total expense amounted to 7.9 cents per dollar of average inventory. The value of inventories averaged \$4,683 per association.

TABLE 8.—INVENTORY EXPENSE, BY ITEMS, 161 ASSOCIATIONS, 1935.

Item of Expense	Expense		Expense as Per Cent of Average Inventory Value	Item as Per Cent of Total
	Per Association	Per \$100 of Sales		
		Cents		
Interest .....	\$234	22.5	5.0	63.4
Insurance .....	89	8.6	1.9	24.1
Taxes .....	46	4.4	1.0	12.5
<b>Total .....</b>	<b>\$369</b>	<b>35.5</b>	<b>7.9</b>	<b>100.0</b>

### Credit Expense

Credit expense amounted to \$316 which was 5 per cent of total operating expenses. Of this expense, bad debts were nearly 60 per cent; and interest, 39 per cent, (Table 9). The charge for bad debts was estimated at 1.5 per cent of credit sales which has ap-

TABLE 9.—CREDIT EXPENSE, BY ITEMS, 161 ASSOCIATIONS, 1935.

Item of Expense	Expense		Expense as Per Cent of Average Value of Receivables	Item as Per Cent of Total
	Per Association	Per \$100 of Sales		
		Cents		
Bad debts .....	\$187	18.0	7.6	59.2
Interest .....	124	11.9	5.0	39.2
Collection expense ...	5	0.5	0.2	1.6
<b>Total .....</b>	<b>\$316</b>	<b>30.4</b>	<b>12.8</b>	<b>100.0</b>

proximately the same as the amount of notes and accounts charged off as uncollectible and the amount of the allowances or reserves set up in 1935 to care for uncollectible notes and accounts. Actual reserves and charge-offs amounted to \$197 per association or 19 cents per \$100 of sales. Whether charges for bad debts were adequate was not determined. An estimate was used rather than the actual amounts to give a more equitable distribution of bad debts for 1935 among associations. Actually some associations made no charge-offs in 1935 while others charged off several years' accumulations. The use of actual amounts, therefore, would not have permitted an analysis of the effects of certain conditions on total credit costs. Bad debts amounted to nearly 8 per cent of the average value of receivables and total expense to 12.8 per cent. Average receivables amounted to \$2,476 per association.

Credit expense, as used here, was not the complete cost of extending credit to patrons since it did not include any portion of the salaries and wages of managers and employees who spent considerable time in recording and collecting accounts.

#### Promotion and Miscellaneous Expense

Promotion expense was largely for advertising and calendars. Other items included were donations to social service organizations, dues to clubs and civic groups, travel expense, and expense incurred for membership and stockholders meetings.

Miscellaneous expense was largely expenditures listed as unclassified or miscellaneous on associations' records. A few associations had small expenses in connection with applications for loans which also were placed in the miscellaneous classification.

#### Net Truck Expense

It was not possible to classify truck expense because the net result of the trucking account generally was carried on the books of the association as net gain or net loss with no summarization of income or costs. Trucking usually was regarded by the associations as a subsidiary function of the mercantile business.

In associations not owning trucks, charges for hauling have been classified as truck expense. The amount of this latter was very small.

It evidently cost truck-owning associations an average of approximately \$1.00 per \$100 of sales in addition to the truck income received to operate their trucks. This fact is apparent from the comparison of expenses of associations owning trucks with similar-sized organizations without trucks. The net truck expense which, except for a few small drayage charges, was the net cost of operation and maintenance of trucking equipment after all income from truck had been credited against expense, varied from 13 to 70 cents of this total additional expense, (Table 10). The other expense

TABLE 10.—EFFECT OF TRUCK OWNERSHIP ON MANAGEMENT AND LABOR EXPENSE, AND ON NET TRUCK EXPENSE, PER \$100 OF SALES, BY SIZE OF ASSOCIATION, 1935.

Sales per Association	Classification with reference to truck ownership	Number of Associations	Sales per Association	Expense per \$100 of Sales		
				Management and Labor	Truck*	Total
Less than \$50,000	Owners	27	\$ 37,281	\$3.56	\$ .71	\$4.27
	Non-owners	17	36,340	3.05	.12	3.17
	Difference	..	.....	.51	.59	1.10
50,000-100,000	Owners	42	71,875	3.43	.72	4.15
	Non-owners	9	73,633	3.12	.02	3.14
	Difference	..	.....	.31	.70	1.01
100,000-150,000	Owners	30	120,578	3.25	.13	3.38
	Non-owners	3	128,458	2.33	..	2.33
	Difference	..	.....	.92	.13	1.05
150,000 or more	Owners	29	227,643	2.86	.21	3.07
	Non-owners	4	201,299	1.84	.02	1.86
	Difference	..	.....	1.02	.19	1.21

\*Includes charges for drayage for associations not having trucks.

of trucking was wages of truck drivers and helpers. Management and labor expense averaged from 31 cents to \$1.02 per \$100 of sales more in truck-owning associations than in those not having trucks. This should be the approximate, if not the exact, difference in wage payments as a result of the trucking enterprise. The total of these two differences in expense then should give an approximate net cost of trucking to truck-owning associations.

Associations, however, did not include as truck income any allowance for use of the truck in hauling produce to a central market or supplies back from the wholesalers. Thus, it is quite likely that truck-owning associations were able to save as much or more in hauling charges as the net cost of trucking amounted to. Associations not owning trucks had to pay freight or truck charges for hauling which truck-owning associations did for themselves. The amount of such freight or truck charges was classified as "cost

of goods sold" rather than "operating expenses" and therefore does not appear in the operating expenses of the non-owners.

### VARIATIONS IN COSTS AND OPERATING RATIOS

As might be expected, there was a wide range among associations in operating costs per unit of sales. The highest cost per \$100 of sales was \$13.45, more than six times the lowest cost of \$2.04. Operating expenses were below \$3.00 in four of the 161 associations and below \$5.00 in nearly one-fourth of the cooperatives studied,

TABLE 11.—DISTRIBUTION OF ASSOCIATIONS, BY OPERATING COSTS, EXCLUDING BAD DEBTS, PER \$100 OF SALES, 161 ASSOCIATIONS, 1935.

Operating Costs Per \$100 of Sales	Number of Associations	Per Cent of Total	Cumulative Number	Cumulative Per Cent
Less than \$3	4	2.5	4	2.5
\$3 - 4	11	6.8	15	9.3
4 - 5	25	15.6	40	24.9
5 - 6	39	24.2	79	49.1
6 - 7	35	21.7	114	70.8
7 - 8	14	8.7	128	79.5
8 - 9	14	8.7	142	88.2
9 - 10	13	8.1	155	96.3
10 or more	6	3.7	161	100.0
All	161	100.0	...	....

(Table 11). On the other hand, expenses were \$10.00 or more per \$100 of sales in six exchanges and \$8.00 or more in one-fifth of them.

The variations in total costs are due to various combinations of the different classes of expense described above. To obtain information as to why costs varied, it is necessary to analyze each separate class of expense rather than the total cost because each is affected by a different measure of efficiency. For example, variations in the efficiency with which fixed property was used will have a decided effect on fixed property expense per unit of sales but may not be evident in total operating costs because other costs could have varied sufficiently in the opposite direction to counteract the change in fixed property expense. Especially is this situation true when a certain class of expense is only a small part of total expenses.

#### Variations in Management and Labor Expense

Management and labor expense averaged \$3.05 cents per dollar of sales but varied among associations from as low as 99 cents to as high as \$7.46.

Because wages paid truck drivers and others engaged in the trucking business of the association were classified as labor and management expense rather than truck expense, management and labor expense per \$100 of sales in the associations owning trucks was higher than for the non-owners. The difference in favor of

the non-owners averaged from 31 cents to \$1.02 per \$100 of sales among the four groups of associations according to volume of sales, (Table 10). Because of this difference, only those 128 associations owning trucks are used in further analyses of variations in management and labor expense.

The cost of management and labor per unit of sales was a result of two influences, the rate at which labor was paid and the efficiency with which labor was used. Both varied widely. The ratio commonly used by mercantile organizations to measure efficiency in use of labor is sales per man, which is the dollar volume of sales divided by the average number of persons employed. Sales per man ranged from \$8,000 to \$120,000,<sup>e</sup> and averaged \$23,000 for the 161 associations.

The average wage and salary rate for manager and employees ranged from \$25.04 to \$110.77 per month among the associations. There was a decided interrelation between the two variables, for as sales were increased from less than \$15,000 to \$40,000 or more per man the salary of the manager nearly doubled, wages of employees increased from \$45 to \$59 per month and the average wage and salary level rose from \$49 to \$72 per month, (Table 12). Thus, as efficiency, which reduces management and labor costs per \$100 of sales, increased, the wage scale, which increases costs per unit, also increased. Hence, the rise in wage scale tends to obscure part of the full effect of the rise in efficiency.

TABLE 12.—AVERAGE SALARIES AND WAGES PER MONTH, BY SALES PER MAN, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales per man		Number of Associations	Salary of Manager Per Month	Wages of Employees Per Man Per Month	Average Wage and Salary Per Month
Range	Average				
Less than \$15,000	\$12,434	17	\$66.17	\$45.02	\$49.09
\$15,000 - 20,000	17,915	35	79.25	46.85	53.78
20,000 - 25,000	22,602	41	94.51	54.80	63.08
25,000 - 40,000	31,102	28	98.49	53.30	62.42
40,000 or more	45,388	7	121.31	59.00	72.23
All	\$23,045	128	\$88.93	\$51.20	\$58.99

**Sales Per Man and Costs.**—In order to bring out the full effect of increased sales per man on management and labor expense, it is necessary, therefore, to hold the scale of wages and salaries fairly constant. This can be done by first classifying the associations according to their average wage and salary level and then further classifying each group according to sales per man. When this was done, management and labor expense declined sharply as sales per

<sup>e</sup>An association handling almost entirely grain. The next highest sales per man was \$51,000.

man were increased. For example, among the 44 associations with a wage and salary scale between \$50 and \$60 per month, management and labor expense for the three associations with less than \$15,000 of sales per man was \$4.75 per \$100 of sales whereas that for the two associations with sales of \$40,000 or more per man was only \$1.56, (Table 13). Among associations whose wage and salary payments averaged between \$60 to \$70 per man per month, management and labor expense dropped from \$5.71 per \$100 of sales in the associations using labor least efficiently to \$1.87 in the most efficient ones. Thus, the most efficient users of labor were able to reduce management and labor expense per unit of sales to less than one-third that of the least efficient associations paying the same scale of wages and salaries and thereby reduce total costs substantially.

TABLE 13.—EXPENSES FOR MANAGEMENT AND LABOR PER \$100 OF SALES, BY AVERAGE WAGE AND SALARY PER MONTH AND SALES PER MAN, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales per man in thousands of dollars	Average Wage and Salary Per Month				All
	Less than \$50	\$50 - 60	\$60 - 70	\$70 or more	
	Management and Labor Expense, per \$100 of Sales.				
Less than 15	\$4.12	*\$4.75	*\$5.71	.....	\$4.83
15 - 20	3.14	3.61	4.51	*\$5.04	3.67
20 - 25	2.51	3.00	3.49	4.08	3.41
25 - 40	1.62	2.23	2.58	3.08	2.46
40 or more	..	* 1.56	* 1.87	* 2.40	1.96
All	\$2.99	\$2.85	\$3.28	\$3.64	\$3.13

\*Three or fewer associations. See Table 13.

The number of associations falling within each efficiency and wage and salary scale group is shown in Table 14.

TABLE 14.—NUMBER OF ASSOCIATIONS, BY AVERAGE WAGE AND SALARY PER MONTH AND SALES PER MAN, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales per man in thousands of dollars	Wages Per Month				All
	Less than \$50	\$50 - 60	\$60 - 70	\$70 or more	
	Number of Associations				
Less than 15	12	3	2	..	17
15 - 20	16	13	4	2	35
20 - 25	7	16	6	12	41
25 - 50	4	10	7	7	28
40 or more	..	2	2	3	7
All	39	44	21	24	128

Sales per man, or the efficiency of associations in the use of labor, is largely within the control of an association for it is mostly a matter of proper organization of work and arrangement of the stock of supplies and the use of extra labor during rush periods. Location of fast moving, heavy supplies, such as certain lines of feed, near the loading platform saves many steps for sales clerks and

may even permit the use of fewer employees. The hiring of part-time employees on Saturdays, during rush seasons and at such other times as needed to supplement a smaller number of regular employees rather than the employment of sufficient full-time workers to handle the peak volumes of business is another means of increasing sales per man. The use of feed trucks to replace the carrying of feed is another method of conserving labor. There are numerous other practices which promote large sales per man.

**Wage and Salary Levels and Costs.**—The other factor affecting management and labor expense per unit of sales was the wage and salary level of the associations. As this level increases among associations of like efficiency, the expenditures for management and labor per unit of sales increases. For example, among associations in which sales ranged from \$15,000 to \$20,000 per man, management and labor expense per \$100 of sales increased from \$3.14 to \$5.04 as the wage level was increased, (Table 13). In associations having \$20,000 to \$25,000 of sales per man, the increase was from \$2.51 to \$4.08. Similar increases were noted at other efficiency levels of associations.

Unlike efficiency, the wage level normally has been regarded as something determined by the location of the association and not within its control. Therefore, efficiency in use of labor has been stressed as a means by which the effects of high wage levels can be counteracted. Analysis of wage and salary levels of Missouri associations, however, did not substantiate such conclusions, for neither the geographical area of the state or the size of town in which the associations were located had any great influence on wage and salary scales. The principal determinant of wage and salary levels was the size of the association, or probably, more accurately, the ability of the association to pay a higher wage or salary.

**Size of Town and the Wage and Salary Level.**—Salaries and wages did increase with the size of town but not greatly when associations of like size were considered. For example, among associations having between \$100,000 and \$200,000 of sales in 1935, managers' salaries in the largest towns averaged \$111.31 per month or 18.6 per cent greater than the average salary of \$93.86 per month in the smallest towns, (Table 15). Among the same associations, wages of employees increased from \$49.15 to \$58.85 per month or 19.7 per cent as the size of town increased from smallest to largest, (Table 16). The salary scale in the largest towns averaged 7.3 per cent and the wage level 18.8 per cent higher than in the smallest.

TABLE 15.—AVERAGE SALARIES OF MANAGERS, BY SIZE OF ASSOCIATION AND SIZE OF TOWN, 161 ASSOCIATIONS, 1935.

Population of town	Sales in thousands of dollars			
	Less than 50	50 - 100	100 - 200	200 or more
	Average Salary Per Month			
Less than 500	\$56.12	\$84.77	\$93.86	*
500 - 2000	63.30	81.78	97.98	\$124.40
2000 or more	*	90.93	111.31	142.00
All	\$58.75	\$84.37	\$100.59	\$130.56

\*Five or fewer associations. Too few to give significant average.

towns for associations handling between \$50,000 and \$100,000 of products and supplies in 1935.

The increases in wage and salary levels, however, due to size of town, were small compared to increases due to size of association in towns of like size. For example, the average salary of managers increased from \$63.30 per month in the smallest associations to \$124.40 per month in the largest associations or 97 per cent, among those located in the medium-sized towns, (Table 15). In the same towns, average wages of employees rose 42.9 per cent, or from \$39.06 per month to \$55.82 per month, as the size of associations increased, (Table 16).

TABLE 16.—AVERAGE WAGES OF EMPLOYEES, BY SIZE OF TOWN AND SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Population of town	Sales in thousands of dollars			
	Less than 50	50 - 100	100 - 200	200 or more
	Average Wage Per Month			
Less than 500	\$34.35	\$44.63	\$49.15	*
500 - 2000	39.06	44.68	53.04	\$55.82
2000 or more	*	53.04	53.85	57.15
All	\$35.82	\$45.78	\$53.78	\$56.52

\*Five or fewer associations. Too few to give significant average.

**Geographic Area and the Wage and Salary Level.**—The location of associations from the standpoint of geographical areas of the state also had relatively little effect on the level of wages and salaries among associations of similar size. For those associations whose sales in 1935 were between \$100,000 and \$200,000, the highest average salary of managers was in the northeastern area and was \$104.66 per month. It was only 10 per cent greater than the lowest average salary which was in southwestern Missouri, (Table 17).

TABLE 17.—AVERAGE SALARIES OF MANAGERS, BY SIZE OF ASSOCIATION AND AREA. 161 ASSOCIATIONS, 1935.

Areas	Sales in thousands of dollars		
	Less than 50	50 - 100	100 - 200
	Average salary per month		
Northwestern	\$58.03	\$77.05	\$102.07
Northeastern	61.57	82.14	104.66
East central	65.00	92.42	103.38
Southwestern	52.03	83.20	95.12
All	\$58.75	\$84.37	\$100.59

The percentage by which highest average salaries exceeded lowest averages, by areas, was 25 per cent for the smallest associations and 20 per cent for the medium-sized group. Wages in the areas having the highest levels of wages were from 16.5 to 21.3 per cent greater than in the areas with lowest levels, (Table 18). Again, size of association was more effective in determining wage and salary levels than geographic location of the association. Salaries of managers in the largest associations averaged from 59 to 83 per cent higher than in the smallest associations within the same area, (Table 17). Average wages of employees of the largest associations were from 38 to 62 per cent higher than those of the smallest associations within each area, (Table 18).

TABLE 18.—AVERAGE WAGES OF EMPLOYEES, BY SIZE OF ASSOCIATION AND AREA, 161 ASSOCIATIONS, 1935.

Areas	Sales in thousands of dollars		
	Less than 50	50 - 100	100 - 200
	Average wages of employees, per month		
Northwestern	\$36.47	\$45.55	\$59.13
Northeastern	35.96	45.23	53.84
East central	38.86	51.61	53.82
Southwestern	33.35	42.56	50.41
All	\$35.88	\$45.78	\$53.78

It is now evident that the wage and salary scale of the association was to some extent affected by its location as to size of town and area of state but that these were not nearly so important as the size of association. This relation between the wage and salary scale and the size of association probably is due to two influences. The first is that it takes a better trained manager who must be paid a higher salary to operate successfully the larger business. That the salaries of managers increase more rapidly than wages of employees bears out this conclusion. The second is that the larger associations, because of their higher average sales per man, can afford to pay higher wages and salaries without increasing their unit cost of sales excessively. Thus, it evidently lies within the power of the boards of directors and managers not only to affect the efficiency of employees through management policies and practices but also to regulate wage scales through their wage policies.

It should be pointed out, however, that legislation setting maximum hours and minimum wages per hour, such as the wages and hours bill passed by Congress, will reduce the management's control over the wage and salary level and increase the importance of high efficiency per worker in holding labor and management expense to a low level.

### Variations in Fixed Property Expense

Fixed property expense varied among associations from 11 cents to \$6.28 per \$100 of sales. One reason for differences in this expense was the practice of associations with regard to ownership of buildings. Those associations which were renting all, or a substantial part of, their buildings had relatively lower fixed property expense than did similar-sized associations which owned their buildings. Among associations with less than \$75,000 of sales, the expense for twelve renters was \$1.13 per \$100 of sales, compared with \$1.92 for 59 owners, (Table 19). There are, however, numerous advantages to ownership, such as permanency of location, which may offset at least part of the economic advantage of renting.

TABLE 19.—EFFECT OF BUILDING OWNERSHIP ON FIXED PROPERTY EXPENSE PER \$100 OF SALES, 71 ASSOCIATIONS WITH LESS THAN \$75,000 OF SALES, 1935.

Classification with reference to buildings	Number of Associations	Sales per Association	Fixed Property Expense per \$100 of Sales
Owners	59	\$46,279	\$1.92
Renters	12	44,369	1.13
All	71	\$45,956	\$1.79

In 1935, 146 associations owned all or nearly all the buildings and other fixed property used in their business. Further study of variations in fixed property expense will be limited to such associations.

Variations in fixed property expense among owners resulted from two causes. The first was the efficiency with which each dollar's worth of fixed property was used. This is commonly measured by fixed property turnover, which is the volume of sales for the year divided by the average value of fixed property at the beginning and end of the year. The average fixed property turnover was 14 but it varied from 1.3 to more than 200. The second cause of variations in fixed property expense was variations in expense per dollar's worth of fixed property, which is the expenditure for maintenance of fixed property per value-unit of such property. It averaged 17 cents and its range was from 6.8 cents to \$1.08 per dollar of fixed property.

**Fixed Property Turnover and Expense Per Dollar of Fixed Property.**—Fixed property turnover and expense per dollar of fixed property were highly interrelated. As turnover increased from less than 5 to 50 or more, fixed property expense increased from 10.9 to 31.1 cents per dollar of fixed property, (Table 20). Two examples will explain why this occurs. A high turnover may result from a large proportion of the value of fixed property having been charged off as depreciation. This situation makes for high expense per

dollar of property. Since depreciation is based on first costs or values, it particularly would be relatively high per dollar of depreciated fixed property values. Repairs also are more dependent on first costs than depreciated value. Taxes and insurance also would be on values somewhat above the net book values of the depreciated properties. Hence, the expense per dollar of fixed property necessarily would be high on property having much of its original cost charged off as depreciation. On the other hand, a low fixed property turnover may result from a high fixed property value due to ownership of brick, stone or tile buildings which have a relatively high original cost per unit of space. Charges for depreciation, insurance and repairs on such buildings, however, would be low in relation to value and hence total costs per dollar of fixed property would be relatively low.

TABLE 20.—FIXED PROPERTY EXPENSE PER DOLLAR OF FIXED PROPERTY, BY ITEMS OF EXPENSE AND FIXED PROPERTY TURNOVER, 146 ASSOCIATIONS OWNING BUILDINGS, 1935.

Fixed property turnover		Number of Associations	Expense per dollar of fixed property					
Range	Average		Total*	Depreciation	Interest	Insurance	Taxes	Repairs
			Cents					
Less than 5	3.3	10	10.9	4.5	5.0	0.7	0.6	0.3
5 - 10	7.7	30	15.2	6.8	5.0	1.4	1.2	0.7
10 - 15	12.3	33	17.0	7.0	5.0	1.9	1.3	1.3
15 - 20	17.0	24	18.6	8.3	5.0	2.0	1.5	1.4
20 - 30	24.1	20	20.2	9.5	5.0	2.1	1.7	2.1
30 - 50	37.0	21	23.3	10.1	5.0	2.2	2.1	3.0
50 or more	78.9	8	31.1	10.4	5.0	4.1	4.3	4.3
All	13.4	146	16.5	7.2	5.0	1.6	1.3	1.2

\*This total is the net result when rent expense is added and rent income deducted from the sum of the five items of expense shown in this table.

An analysis of items of fixed property expense substantiates this conclusion because depreciation, insurance, repairs and even taxes increased in relation to the average value of fixed property as the fixed property turnover increased. Depreciation, for example, increased from 4.5 per cent to 10.4 per cent of the value of fixed property, (Table 20). This indicates that the high turnovers have resulted in part from the fact that a greater proportion of the original cost of fixed property has been charged off as depreciation.

Because of this interrelationship, it is necessary that an analysis of the effects of turnover, or efficiency, on fixed property expense per \$100 of sales be made among associations having similar amounts of expense per dollar of fixed property if the full effect of efficiency is to be measured. This has the effect of limiting the comparison of efficiency and fixed property expense per unit of sales to associations with similar buildings, machinery and equipment situations.

**Fixed Property Turnover and Expense Per \$100 of Sales.**—Among associations having lowest expense per dollar of fixed property, one association attained a fixed property turnover of 34 and had a fixed property expense of only 42 cents per \$100 of sales and six associations, having turnovers between 20 and 30, had an average expense of only 58 cents, (Table 21). These costs are contrasted to

TABLE 21.—FIXED PROPERTY EXPENSE PER \$100 OF SALES BY FIXED PROPERTY TURNOVER AND EXPENSE PER DOLLAR OF FIXED PROPERTY, 146 ASSOCIATIONS OWNING BUILDINGS, 1935.

Fixed Property Turnover	Expense in Cents Per Dollar of Fixed Property			
	Less than 15	15 - 20	20 or more	All
	Fixed Property Expense Per \$100 of Sales			
Less than 5	\$3.26	....	....	\$3.26
5 - 10	1.72	\$2.12	\$2.65	1.97
10 - 15	1.01	1.47	1.63	1.39
15 - 20	.78	1.02	1.30	1.09
20 - 30	.58	.70	1.11	.84
30 - 50	* .42	.48	.74	.63
50 or more	....	* .35	.41	.39
All	\$1.45	\$1.22	\$1.06	\$1.23

\*Only one association in this group. All others have four or more. See Table 22.

\$3.26 per \$100 of sales for the associations in this group with fixed property turnovers of less than 5. Thus the most efficient association in the use of fixed property had costs which were \$2.84 per \$100 of sales below the average fixed property expense of the ten associations using their fixed property least efficiently. This saving was equal to 47 per cent of the average total operating costs of the 161 associations in 1935.

The most efficient association among those having a medium amount of expense per dollar of fixed property had a fixed property expense which was \$1.77 per \$100 of sales less than that in the 11 least efficient ones, (Table 21). Among the associations with heaviest expense per dollar of fixed property, fixed property expense was only 41 cents per \$100 of sales in the seven with fixed property turnovers in excess of 50, compared with \$2.65 for those with turnovers between 5 and 10. Thus, associations attaining high fixed property turnovers are able to reduce fixed property expense, and to that extent, total operating costs sharply below those of the less efficient associations.

An association attains a high fixed property turnover by having its investment in buildings and equipment in line with the volume of business it does. Over-investment in fixed property results in low turnovers. Judging from the ratios attained, most associations have made prudent investments in fixed property. In nearly three-fourths of the associations, sales were 10 or more times the value of fixed property, which is a satisfactory ratio for businesses such

as these associations are engaged in. The number of associations attaining each degree of efficiency in the use of fixed property at each level of fixed property expense is shown in Table 22.

TABLE 22.—NUMBER OF ASSOCIATIONS, BY FIXED PROPERTY TURNOVER, AND FIXED PROPERTY EXPENSE PER DOLLAR OF FIXED PROPERTY, 146 ASSOCIATIONS OWNING BUILDINGS, 1935.

Fixed Property Turnover	Expense in Cents Per Dollar of Fixed Property			Total Number	Per Cent of Total Number
	Less than 15	15 - 20	20 or more		
	Number of Associations				
Less than 5	10	..	..	10	6.9
5 - 10	15	11	4	30	20.5
10 - 15	8	20	5	33	22.6
15 - 20	4	13	7	24	16.4
20 - 30	6	4	10	20	13.7
30 - 50	1	8	12	21	14.4
50 or more	..	1	7	8	5.5
Total	44	57	45	146	100.0

### Variations in Inventory Expense

Inventory expense averaged 36 cents per \$100 of sales. The range among associations, however, was from 10 to 98 cents. This variation in cost was due largely to variations in inventory turnover, which is the ratio of the amount of sales to the average of beginning and closing inventories. Inventory turnover measures the effectiveness with which an association's stocks of supplies were kept in line with its sales. Inventory turnovers were as low as 5.9 and as high as 77.2 among associations in which supplies were 40 per cent or more of total sales. Higher ratios were recorded among associations whose sales were almost entirely farm products.

Inventory turnovers for many associations were relatively high for mercantile organizations of this kind. Three developments account for this fact. First, the use of the truck for bringing supplies in from the wholesalers has tended to increase turnovers, because smaller mixed loads are hauled and more frequent shipments are received than would be possible on an economical basis by rail. The manager, therefore, is able to hold inventories to a minimum. Second, most of the associations studied were associated with the Missouri Farmers' Association which maintains central wholesaling associations for supplying the local exchanges. These are within convenient trucking distances and carry a fairly complete line of supplies. Thus, they further facilitate the reduction of inventories carried by the local exchanges. Third, the sales of most associations include a substantial percentage of farm products bought from farmers which is moved rapidly to market. Since the inventory of products is therefore kept low in relation to sales, the inventory turnovers, which were calculated on the basis of total inventories

and total sales are, in most instances, somewhat larger than they would have been if based only on supply sales and inventories. Turnovers of supply inventories were not possible of calculation because, in many cases, the average inventories obtained from financial reports could not be separated into products and supplies.

**Inventory Turnover and Expense.**—In determining the effect of inventory turnover on inventory expense per \$100 of sales, associations were first classified according to the percentage of sales considered supplies so as to eliminate any effects of differences in proportion of such sales among associations upon turnovers and expenses. For associations whose supply sales were from 40 to 60 per cent of total sales the inventory expense per \$100 of sales declined from 64.4 to 14.0 cents as the inventory turnovers were increased from less than 15 to more than 50, (Table 23).

TABLE 23.—INVENTORY EXPENSE PER \$100 OF SALES, BY INVENTORY TURNOVER AND PER CENT OF SALES WHICH WERE SUPPLIES, 161 ASSOCIATIONS, 1935.

Inventory Turnover	Per Cent of Sales Classified as Supplies			All Associations
	Less than 40	40 - 60	60 or more	
	Inventory expense in cents per \$100 of Sales			
Less than 15	*	64.4	75.9	68.0
15 - 20	*	45.9	47.5	47.0
20 - 25	*	36.0	34.7	35.5
25 - 35	*	28.0	27.8	27.7
35 - 50	...	20.4	21.3	21.2
50 or more	12.5	14.0	† 16.4	13.5

\*Too few associations to give significant results.

†Two associations only, six or more in all other instances.

That the proportion of sales which were supplies was a factor in determining inventory turnovers is evident from Table 24. The inventory turnover was above 50 in more than one-half of the associations having less than 40 per cent of sales classified as supplies. Such high turnovers were attained by only 13 per cent of the associations whose sales were from 40 to 60 per cent supplies and by only 3 per cent of those having supply sales equal to 60 per cent or more of total sales.

Inventory turnovers among associations doing a similar type of business measure the extent to which inventories are kept at a level consistent with sales. Thus, they are subject to control of the management of the association. In order to attain high turnovers, the manager must keep stocks of slowly-moving goods at a minimum and stocks of other supplies sufficient only to last until a new shipment may be received.

TABLE 24.—NUMBER OF ASSOCIATIONS, BY INVENTORY TURNOVER AND PER CENT OF SALES WHICH WERE SUPPLIES, 161 ASSOCIATIONS, 1935.

Inventory Turnover	Per Cent of Sales Classified as Supplies			Unclassified	All Associations
	Less than 40	40 - 60	60 or more		
	Number of Associations				
Less than 15	1	14	13	5	33
15 - 20	2	9	15	3	29
20 - 25	1	13	11	..	25
25 - 35	1	14	12	4	31
35 - 50	..	11	11	2	24
50 or more	6	9	2	2	19
All	11	70	64	16	161

### Variations in Credit Expense

Credit expense, exclusive of bad debts, averaged 12.4 cents and bad debts 18.0 cents per \$100 of sales. Because some associations did not set aside an allowance for bad debts, or charge off aged accounts whereas others set aside more than necessary to cover their losses, it was decided to estimate bad debts at 1½ per cent of the credit sales, an allowance considered ample to cover losses for 1935. On this basis, bad debts totaled about the same as those actually provided for by the associations in 1935, but were more equitably distributed.

A measure of the effectiveness with which credit is kept under control by mercantile organizations is the number of days of sales outstanding as receivables. This was obtained, in this case, by dividing the sum of accounts and notes receivable by average daily sales, which was total sales for the year divided by 312, the number of sales days in the year. Thus when the number of days sales outstanding was 6, one week's sales were outstanding and when the number was 26, one month's sales were uncollected. For this study, the number of days of sales outstanding was calculated on the basis of supply sales only, since receivables arose only from the sale of supplies. All commodities and articles which were handled principally for sale to patrons were considered supplies, while commodities bought from farmers were regarded as products. Supplies, therefore, included corn and other feed grains, feedstuffs, groceries, hardware and petroleum products.

For the 145 associations in which sales for 1935 were classified, supply sales averaged \$64,349 per association, or 59.5 per cent of total sales. Credit sales amounted to \$12,754 per association or 19.8 per cent of supply sales. Credit sales were calculated on the basis of estimates by managers of the percentage of supplies sold on credit. Receivables, both accounts and notes, outstanding at the end of 1935 averaged \$2,559 per association or 20.1 per cent of credit sales for the year. They also amounted to 12.6 days of supply

sales. The range in days of supply sales outstanding was from none to 83.

**Days Sales Outstanding and Expense.**—As the amount of receivables relative to supply sales, increased among the 145 associations, credit expense per \$100 of all sales increased. In associations with less than 4 days sales outstanding, estimated bad debts averaged 8.6 cents and total expense, 11.5 cents, per \$100 of sales, (Table 25). In the associations with more than 30 days of sales outstanding, total credit expense averaged nearly 75 cents per \$100 of sales, of which nearly 25 cents was bad debts and 50 cents, other expense.

The increase in number of days supply sales outstanding was found to be due both to a more liberal extension of credit and to a less forceful collection policy. In associations with least credit outstanding, credit sales averaged only 10 per cent of supply sales, compared to an average of more than 25 per cent in all groups of associations having 12 or more days of supply sales outstanding, (Table 25). Thus a more liberal credit policy was followed by these latter associations.

TABLE 25.—PER CENT OF SUPPLY SALES ON CREDIT, PER CENT OF CREDIT SALES OUTSTANDING AND CREDIT EXPENSE PER \$100 OF ALL SALES, BY DAYS OF SUPPLY SALES OUTSTANDING, 145 ASSOCIATIONS IN WHICH SALES WERE CLASSIFIED, 1935.

Days of Supply Sales Outstanding Range	Number of As- socia- tions	Per Cent of Sup- ply Sales on Credit	Per Cent of Credit Sales Out- standing	Credit Expense Per \$100 of Sales		
				Bad Debts	Interest and Other	Total
Less than 4	2.4	22	9.9	8.6	2.9	11.5
4 - 8	6.4	32	16.5	15.4	6.5	21.9
8 - 12	9.9	29	17.6	18.0	10.6	28.4
12 - 16	13.7	17	25.8	20.5	12.5	33.0
16 - 20	18.5	15	29.8	26.2	17.8	44.0
20 - 30	22.9	17	29.5	24.9	21.7	47.9
30 or more	48.5	13	25.3	24.8	49.7	74.5
All	12.6	145	19.8	20.1	17.7	30.0

Furthermore, the associations with a relatively large amount of supply sales outstanding had not been as successful in collecting the amount of credit extended. Receivables outstanding at the end of 1935 were equal to 60 per cent of estimated credit sales for 1935 in associations having 30 or more days of sales outstanding, whereas only 8 per cent of credit sales were outstanding in associations with least credit outstanding, (Table 25).

Credit expense per \$100 of supply sales varied from nearly 20 cents among associations with least credit outstanding in relation to sales to \$1.15 among those having most receivables outstanding,

(Table 26). The expense varied from \$2.00 to \$4.51 per \$100 of credit sales.

TABLE 26.—CREDIT EXPENSE PER \$100 OF SUPPLY SALES AND PER \$100 OF CREDIT SALES, BY DAYS SALES OUTSTANDING, 145 ASSOCIATIONS IN WHICH SALES WERE CLASSIFIED, 1935.

Days Sales of Supplies Outstanding	Number of Associations	Credit Expense Per \$100 of Supply Sales			Credit Expense Per \$100 of Credit Sales		
		Bad Debts	Interest and Other	Total	Bad Debts	Interest and Other	Total
Less than 4	22	14.9	4.9	19.8	\$1.50	\$ .50	\$2.00
4 - 8	32	24.8	10.6	35.4	1.50	.64	2.14
8 - 12	29	26.4	17.7	44.1	1.50	1.01	2.51
12 - 16	17	38.6	23.6	62.2	1.50	.92	2.42
16 - 20	15	44.7	30.4	75.1	1.50	1.02	2.52
20 - 30	17	44.2	36.6	80.8	1.50	1.24	2.74
30 or more	13	38.7	77.7	116.4	1.50	3.01	4.51
All	145	29.7	20.8	50.5	\$1.50	\$1.05	\$2.55

Since few associations gave discounts for cash or charged for credit, the cash patron is paying for part of the cost of extending credit to the credit patrons. Although the credit expense as given here includes little more than bad debts and interest on outstanding accounts and notes, the costs is substantial. It amounted to 50 cents per \$100 of supply sales from which it arose. Furthermore, if this credit expense were to have been borne entirely by the credit sales, it would have been necessary for the margin taken by associations to have been 2.5 per cent larger on credit sales than on cash sales, (Table 26).

Thus, the granting of credit by merchandising organizations is expensive even when only part of the total credit expense is considered. It must be remembered that this expense does not include any allowance for time spent by managers, bookkeepers, and others in recording and collecting accounts which is included in management and labor expense. The total expense resulting from credit sales, therefore, would be considerably larger.

#### Variations in Other Expenses

It was not possible to analyze other classes of expense on the basis of the efficiency with which the various elements responsible for each expense were used. General expense, for example, was made up of several widely different items of cost, hence any operating ratio or measure of efficiency to be used in connection with this expense would have had to have been an index based on the relative efficiency with which office supplies, gas, water, electricity, and other such materials responsible for general expense were used. Such was not possible of preparation from data obtained for this study. Likewise, data were not available for measuring the relative efficiency with which advertising and other elements of promotion

cost were used nor for determining how effectively the trucking equipment was used.

Among the classes of expense not analyzed the most important one was general expense which made up 10.2 per cent of the total expenses of the 161 associations. General expense varied among associations from 10 cents to \$1.30 per \$100 of sales, but was from 50 to 80 cents in nearly one-half of the associations and from 30 to 90 cents in three-fourths of them. The other classes of expense not analyzed were relatively unimportant, making up only 7.4 per cent of average expense.

### Interrelationship Among Operating Ratios

It is a common belief that if a cooperative association is efficient in the use of labor or some other element of the cost of doing business, it will tend to be more efficient in the use of other elements making up total costs. If this were true, there would be a high degree of interrelationship between operating ratios. There appears, however, to be little or no correlation among the ratios. For example, as average sales per man increased from \$12,600 to \$46,000, the fixed property turnover increased relatively little, (Table 27).

TABLE 27.—RELATION BETWEEN SALES PER MAN AND OTHER EFFICIENCY FACTORS, 120 ASSOCIATIONS\*, 1935.

Sales Per Man		Number of Associations	Fixed Property Turnover	Inventory Turnover	Number of Days of Supply Sales Outstanding
Range	Average				
Less than \$15,000	\$12,578	10	10.2	14.4	10.6
\$15,000 - 20,000	17,848	34	12.0	19.1	13.5
20,000 - 25,000	22,653	32	15.5	20.7	12.7
25,000 - 40,000	30,671	34	12.8	27.3	11.6
40,000 or more	46,028	10	14.0	20.2	15.0
All	\$23,726	120	13.2	21.4	12.6

\*Excludes all associations in which sales were unclassified, those in which supply sales were less than 40 per cent of total and ones in which all or a large part of the buildings used in the business were rented.

The highest turnover of building and equipment was in associations with a medium volume of sales per man. Inventory turnover increased considerably as sales per man became larger but the increase was not wholly consistent. Days of supply sales outstanding became greater, a less desirable trend, as sales per man increased.

Results similar to those obtained when sales per man were increased, were obtained when each of the other three operating ratios were increased for the purpose of detecting tendencies for operating ratios to increase or decline together. In other words these results do not indicate that if an association is efficient with rela-

tion to the use of one element of cost, it also will be efficient in the use of other elements necessary for merchandizing.

### Effect of Ratios on Total Costs

Since there appears to be no great degree of relationship among the various operating ratios, it is desirable to point out the effect of variations in each ratio not only on its allied expense but also on total expense when other conditions are average. In bringing out this effect, an effort was made to prevent conditions other than changes in the particular operating ratio from changing enough to influence the results. For example, only associations in which the wage and salary levels were similar were used in determining the effect of sales per man on costs. Also, to further the combination of factors, the associations were divided into five equal or nearly equal groups according to the variations in the operating ratios.

**Sales Per Man and Total Costs.**—When the 65 associations in which wage and salary scales ranged from \$50 to \$70 per month were considered, management and labor expense was \$4.92 per \$100 of sales or 66 per cent above average in the one-fifth of the associations with lowest sales per man, (Table 28). The association with very high sales per man paid only \$1.98 per \$100 of sales for man-

TABLE 28.—EFFECT OF SALES PER MAN ON MANAGEMENT AND LABOR EXPENSE AND ON TOTAL EXPENSES PER \$100 OF SALES, 65 ASSOCIATIONS WITH AVERAGE SALARIES AND WAGES FROM \$50 TO \$70 PER MONTH, 1935.

Sales Per Man		Number of Associations	Management and Labor Expense Per \$100 of Sales		Total Expense Per \$100 of Sales Assuming Average Expenses for All Other Classes of Expense	
Rank	Average		Amount	Per Cent of Average	Amount	Per Cent of Average
Very low	\$14,499	13	\$4.92	166.2	\$7.85	133.2
Low	19,165	13	3.45	116.6	6.38	108.3
Medium	22,251	13	3.23	110.8	6.21	105.4
High	26,006	13	2.68	90.5	5.61	95.2
Very high	37,739	13	1.98	66.9	4.91	83.4
All	\$23,938	65	\$2.96	100.0	\$5.89	100.0

agement and labor. This was 33 per cent below the average for the entire 65 associations.

Assuming that the associations were average in all other respects, what effect would variations in sales per man have on total expenses? This also is shown in Table 28. Average expenses, exclusive of labor and management, amounted to \$2.93 per \$100 of sales, thus, total expenses per unit of sales under the assumed conditions would have averaged \$5.89 and would have varied from \$7.85 or 33 per cent above average to \$4.91 or 17 per cent below

average due alone to variations in the efficiency with which labor and management were used. Thus increasing sales per man was extremely effective in reducing not only labor and management expense but also total expense because labor and management expense is such an important share of total expenses.

**Fixed Property Turnover and Total Costs.**—Fixed property expense per \$100 of sales dropped from \$2.08, or 75 per cent above average, in associations with very low property turnovers, to 52 cents, or 56 per cent below average, in those with very high turnovers, (Table 29). The effect of fixed property turnover on total

TABLE 29.—EFFECT OF FIXED PROPERTY TURNOVER ON FIXED PROPERTY EXPENSE AND TOTAL EXPENSES PER \$100 OF SALES, 81 ASSOCIATIONS IN WHICH FIXED PROPERTY EXPENSE WAS FROM 15 TO 25 CENTS PER DOLLAR OF FIXED PROPERTY, 1935.

Fixed Property Turnover		Number of Associations	Fixed Property Expense Per \$100 of Sales		Total Expenses Per \$100 of Sales, Assuming Average Expenses for Other Classes of Expense	
Rank	Average		Amount	Per Cent of Average	Amount	Per Cent of Average
Very low	8.4	16	\$2.08	174.8	\$6.84	115.1
Low	12.0	16	1.52	127.7	6.28	105.5
Medium	15.6	17	1.21	101.7	5.97	100.3
High	22.2	16	.89	74.8	5.65	95.0
Very high	38.7	16	.52	43.7	5.28	88.7
All	15.6	81	\$1.19	100.0	\$5.95	100.0

expenses, when all other conditions were average was considerably less. Under these conditions, total costs declined from \$6.84 per \$100 of sales, or 15 per cent above average, to \$5.28, or 11 per cent below average. To obtain comparable results only the 81 associations in which fixed property expense was from 15 to 25 cents per dollar of fixed property were used in this analysis.

**Inventory Turnover and Total Costs.**—Although inventory expense declined from 78 per cent above to 57 per cent below average and inventory turnovers increased, total expense was only slightly

TABLE 30.—EFFECT OF INVENTORY TURNOVER ON INVENTORY EXPENSE AND TOTAL EXPENSES PER \$100 OF SALES, 70 ASSOCIATIONS WHOSE SUPPLY SALES WERE FROM 40 TO 60 PER CENT OF TOTAL SALES, 1935.

Inventory Turnover		Number of Associations	Inventory Expense Per \$100 of Sales		Total Expenses Per \$100 of Sales, Assuming Average Expense for Other Classes of Expense	
Rank	Average		Amount Cents	Per Cent of Average	Amount	Per Cent of Average
Very low	11.4	14	64.4	177.9	\$6.26	104.7
Low	18.2	14	43.5	120.2	6.06	101.3
Medium	24.8	14	32.3	89.2	5.94	99.3
High	34.0	14	25.1	69.3	5.87	98.2
Very high	55.7	14	15.5	42.8	5.78	96.7
All	21.6	70	36.2	100.0	\$5.98	100.0

affected by variations in inventory turnover, (Table 30). This was due to the relatively small proportion of total expense resulting from inventory expense.

**Days Sales Outstanding and Total Costs.**—The number of days of supply sales outstanding also affected total expense very little although credit expense per \$100 of sales varied from 90 per cent above to 55 per cent below average as the relative amount of credit outstanding increased, (Table 31).

TABLE 31.—EFFECT OF NUMBER OF DAYS' SALES OF SUPPLIES OUTSTANDING AS RECEIVABLES ON CREDIT EXPENSE AND TOTAL EXPENSES PER \$100 OF SALES, 70 ASSOCIATIONS WHOSE SUPPLY SALES WERE FROM 40 TO 60 PER CENT OF TOTAL SALES, 1935.

Number of Days' Sales of Supplies Outstanding Rank	Average	Number of Associations	Credit Expense Per \$100 of Sales Amount			Total Expenses Per \$100 of Sales, Assuming Average Expense for Other Classes of Expense		
			Bad Debts		Per Cent of Average	Amount	Per Cent of Average	
			Other	Total				
Very high	31.2	14	24.4	25.9	50.3	190.5	\$6.18	104.0
High	16.8	14	19.3	14.6	33.9	128.4	6.02	101.3
Medium	11.3	14	14.8	11.5	26.3	99.6	5.94	100.0
Low	7.9	14	8.5	7.0	15.5	58.7	5.84	98.3
Very low	8.5	14	8.9	3.0	11.9	45.1	5.80	97.6
All	13.2	70	14.8	11.6	26.4	100.0	5.94	100.0

**Combination of Ratios and Total Costs.**—The combined effect of variations in operating ratios, or efficiency, on total expenses is apparent from Table 32. In the least efficient one-fifth of the associations, each of the four classes of expense were from 66 to 90 per cent higher than the average and their total averaged 71 per cent greater than average. Each expense was from 33 to 57 per cent lower in the most efficient associations and averaged 42 per cent less than the average for all associations. Of the four expenses, labor and management expense responded least to variations in operating ratios.

Even if the four classes of expense not affected by the above ratios; namely, general expense, promotion, miscellaneous and net truck expense had been average, very high ratios would have reduced total expenses 34 per cent below the average for all associations and very low operating ratios would have caused total expenses to be nearly 58 per cent higher than average, (Table 32).

These figures indicate the possibilities for reducing expense in the less efficient associations by increasing the operating ratios. An association now among the least efficient one-fifth of the associations in the use of labor, fixed property and inventories, and in handling credit could reduce costs 37 per cent by becoming average in

TABLE 32.—EFFECT OF COMBINATION OF EFFICIENCY FACTORS ON TOTAL EXPENSES, 1935.

Class of Expense	Number of As- socia- tions	Average Expense of all Associa- tions Included	Expenses of Least Efficient Associations		Expenses of Most Efficient Associations	
			Amount	Per Cent of Average	Amount	Per Cent of Average
Management and labor	65	\$2.96	\$4.92	166.2	\$1.98	66.9
Fixed property	81	1.19	2.08	174.8	.52	43.7
Inventory	70	.36	.64	177.9	.16	42.8
Credit	70	.26	.50	190.5	.12	45.1
Total	..	\$4.77	\$8.14	170.6	\$2.78	58.3
Other expense*	..	1.05	1.05	100.0	1.05	100.0
Grand total	..	\$5.82	\$9.19	157.9	\$3.83	65.8

\*Assuming average amounts per \$100 of sales for other expenses.

efficiency and 58 per cent by becoming one of the most efficient associations.

### RELATION OF SIZE TO COSTS AND EFFICIENCY

How much of these variations in operating ratios and costs resulted from variations in the size of the business unit? Ordinarily, operating costs per unit of sales are lower in large merchandizing associations than in small ones, because the efficiency with which labor, fixed property and inventories are used tends to increase as the volume of business of such organizations increases. This relation of size of association to efficiency and costs is of particular importance to Missouri's cooperative exchanges and elevators because so many are small in size. In 1935, 11.2 per cent of such associations had less than \$25,000 of sales, one-third had less than \$50,000 of business, and one-half sold less than \$75,000 of products and supplies, according to an earlier publication<sup>7</sup> of this station.

The sales of the 161 associations covered by this study varied from \$16,000 to \$478,000 in 1935. Only six or 4 per cent of these had less than \$25,000 of sales and only 44 per cent had less than \$75,000 of business. Thus, a smaller percentage of the small associations than of the large ones were included in this study because the financial records of the small associations frequently were not sufficiently detailed to permit their use. Nevertheless, a sufficient number of records of smaller associations were available to give representative data for small businesses.

#### Effect of Size on Costs

The average total expenses of associations increased rapidly as sales increased. It cost only \$1,950 per association to operate the six associations with less than \$25,000 of sales, whereas average expenses were \$14,100 for the fifteen associations with \$200,000 or

<sup>7</sup>Mo. Agr. Exp. Sta. Bul. 389, page 11, Table 5.

TABLE 33.—AVERAGE EXPENSES, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Sales in Thousands of Dollars	Classes of Expense								
	Manage- ment and Labor	Fixed Property	General	Inven- tory	Credit	Net Truck	Promo- tion	Miscella- neous	Total
	(Expenses Per Association)								
Less than 25	\$ 901	\$ 398	\$ 177	\$103	\$ 94	\$224	\$ 36	\$ 17	\$1,951
25 - 50	1,312	600	285	162	103	175	39	35	2,711
50 - 75	2,188	861	368	243	199	389	59	25	4,332
75 - 100	2,709	1,290	571	334	268	467	87	22	5,748
100 - 150	3,836	1,417	707	459	386	144	166	43	7,158
150 - 200	5,027	2,115	1,118	579	580	491	172	65	10,147
200 or more	7,562	2,639	1,558	832	758	327	317	106	14,099
All	\$3,167	\$1,266	\$ 636	\$369	\$316	\$219	\$116	\$ 42	\$ 6,211

TABLE 34.—EXPENSE PER \$100 OF SALES, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Sales in Thousands of Dollars	Number of As- socia- tions	Classes of Expense								
		Manage- ment and Labor	Fixed Prop- erty	Gen- eral	Inven- tory	Credit	Net Truck	Promo- tion	Miscel- laneous	Total
		Expense per \$100 of Sales								
Less than 25	6	\$4.32	\$1.91	\$ .85	\$ .49	\$ .45	\$1.03	\$ .17	\$ .08	\$9.35
25 - 50	38	3.29	1.51	.71	.40	.26	.44	.10	.09	6.80
50 - 75	27	3.64	1.43	.61	.40	.33	.65	.10	.04	7.20
75 - 100	24	3.16	1.51	.67	.39	.31	.54	.10	.02	6.70
100 - 150	33	3.16	1.17	.58	.38	.32	.12	.13	.04	5.90
150 - 200	13	2.80	1.18	.62	.32	.32	.27	.10	.04	5.65
200 or more	15	2.71	.95	.56	.30	.27	.12	.11	.04	5.06
All	161	\$3.05	\$1.22	\$ .61	\$ .36	\$ .30	\$ .29	\$ .11	\$ .04	\$5.98

more of sales, (Table 33). The increase was consistent as size of association increased. The amount of each class of expense, except net truck and miscellaneous, also increased as volume of sales increased.

The increase in costs, however, did not keep pace with the rise in average sales. Hence, total expenses per \$100 of sales declined as sales increased. In the largest associations, total costs were only \$5.06 per \$100 of sales, compared with \$9.35 in the smallest associations, (Table 34). The trend was not consistently downward as size increased for costs were lower relative to sales in associations handling from \$25,000 to \$50,000 of sales than in the group of associations next larger in size.

Although there was a general tendency for each class of expense, excepting net truck and miscellaneous, to decline in relation to sales as the size of association increased, the decline was not constant. In several instances, average expense per \$100 of sales for a particular size group was higher than that of the size group next smaller. For example, credit expense per \$100 of sales was lowest in the associations which had from \$25,000 to \$50,000 of sales in 1935, (Table 34).

There was no distinct tendency for the distribution of total ex-

pense among the various classes of expense to change greatly as the size of association increased. In other words, management and labor expense was approximately one-half of total expenses regardless of the size of association, (Table 35). Similarly, fixed property expense tended to one-fifth of the total expense in large as well as small associations.

As seen earlier, most variations in costs resulted from variations in two influences. One of these was efficiency in the use of an element of cost, such as sales per man; and the other was the level of costs per unit of that element, such as the wage and salary level. Thus, the relationship between size of association and these two influences should explain why certain important classes of expense and total costs tend to decline as the volume of sales increases.

TABLE 35.—PER CENT WHICH EACH CLASS OF EXPENSE WAS OF TOTAL EXPENSES, BY SIZE OF ASSOCIATIONS, 161 ASSOCIATIONS, 1935.

Sales in Thousands of Dollars	Classes of Expense								
	Manage- ment and Labor	Fixed Property	General	Inven- tory	Credit	Net Truck	Promo- tion	Miscel- laneous	Total
	(Each class as per cent of total)								
Less than 25	46.2	20.4	9.1	5.3	4.8	11.5	1.8	0.9	100.0
25 - 50	48.4	22.1	10.5	6.0	3.8	6.5	1.4	1.3	100.0
50 - 75	50.5	19.9	8.5	5.6	4.6	9.0	1.3	0.6	100.0
75 - 100	47.1	22.5	9.9	5.8	4.7	8.1	1.5	0.4	100.0
100 - 150	53.6	19.8	9.9	6.4	5.4	2.0	2.3	0.6	100.0
150 - 200	49.6	20.9	11.0	5.7	5.7	4.8	1.7	0.6	100.0
200 or more	53.6	18.7	11.0	5.9	5.4	2.3	2.3	0.8	100.0
All	51.0	20.4	10.2	5.9	5.1	4.8	1.9	0.7	100.0

### Size and Sales per Man

Sales per man, the operating ratio which had a great influence on labor and management expense per \$100 of sales, increased as the size of the associations increased. In the fifteen largest associations sales averaged \$29,000 per man, which was nearly two and one-half times the \$12,000 of sales per man in the smallest associations, (Table 36). Thus this class of expense per unit of sales should have declined sharply as the volume of sales increased.

### Size and the Wage and Salary Level

The complete effect of this increased efficiency, however, was not apparent in labor and management expense per \$100 of sales because the wage and salary level also increased with size of association. The average wage and salary scale was \$65 per month in the largest association compared to \$42 in the smallest ones, (Table 36). The greatest increase was in managers' salaries. Their average salary nearly trebled whereas wages increased less than 60 per cent. The higher wages and salaries paid by largest associations counteracted much of the effect of higher efficiency in use of labor attained by such associations.

TABLE 36.—SALES PER MAN AND AVERAGE WAGES AND SALARIES, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Sales Per Association	Number of Associations	Sales Per Man	Average Per Month		
			Manager's Salary	Employee's Wages	Total Salaries and Wages
Less than \$25,000	6	\$11,903	\$45.79	\$36.71	\$41.89
\$ 25,000 - 50,000	38	17,495	60.79	35.81	46.77
\$ 50,000 - 75,000	27	18,490	80.65	43.76	55.08
\$ 75,000 - 100,000	24	22,731	88.55	47.64	58.48
\$100,000 - 150,000	33	23,379	95.62	52.11	60.49
\$150,000 - 200,000	18	28,320	109.71	56.17	64.60
\$200,000 or more	15	29,232	130.56	57.39	65.07
All	161	\$23,780	\$86.81	\$51.00	\$59.18

There seemed to be considerable reason for a greater increase in managers' salaries than in wages as the volume of sales increased. The manager is less of a bookkeeper and salesclerk in the larger associations than in the smaller ones. This is indicated by the fact that the six small associations hired only nine months of labor per association, or three-fourths of a man other than the manager. On the other hand, the largest associations furnished 102 months of employment to others than the manager, or the equivalent of 8.5 persons per association, (Table 37). The manager, therefore, was

TABLE 37.—MONTHS OF EMPLOYMENT OF MANAGERS AND OTHER EMPLOYEES, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Sales Per Association Range	Number of Associations	Months of Employment			Manager as Per Cent of Total Employees
		Manager	Others	All	
Less than \$25,000	6	12.0	9.0	21.0	57.0
25,000 - 50,000	38	12.0	15.3	27.3	44.0
50,000 - 75,000	27	12.0	27.1	39.1	30.6
75,000 - 100,000	24	12.0	33.3	45.3	26.5
100,000 - 150,000	33	12.0	50.3	62.3	19.3
150,000 - 200,000	18	12.0	64.0	76.0	15.7
200,000 or more	15	12.0	102.3	114.3	10.5
All	161	12.0	40.5	52.5	22.9

57 per cent of total employees in the associations with the smallest sales and only 10.5 per cent in those with largest sales. Hence, the manager must have spent much of his time in planning work and supervising employees in the larger associations.

The fact that managers in small associations spent considerable time at duties which in larger associations were assigned to other employees, is further emphasized by information as to proportion of managers keeping the records of the association. Based on reports for 1935 from 243 elevators and exchanges, managers kept the records in nearly two-thirds of the associations with less than \$25,000 of sales whereas the manager was also bookkeeper in less than 10 per cent of the associations whose sales were \$200,000 or more, (Table 38).

TABLE 38.—PROPORTION OF ASSOCIATIONS IN WHICH MANAGERS KEPT THE RECORDS, BY SIZE OF ASSOCIATION, 243 EXCHANGES AND ELEVATORS, 1935.\*

Sales	Number of Associations	Associations in Which Manager Kept Records	
		Number	Per Cent
Less than \$25,000	25	16	64.0
\$ 25,000 - 50,000	57	33	57.9
50,000 - 75,000	41	21	51.2
75,000 - 100,000	32	16	50.0
100,000 - 150,000	46	12	26.1
150,000 - 200,000	21	5	23.8
200,000 or more	21	2	9.5
All	243	105	43.2

\*Missouri Agricultural Experiment Station Bulletin 389, page 54, Table 62.

### Size and Fixed Property Turnover

As the size of association increased from smallest to largest, average fixed property turnovers increased from 7.6 to 19.2, (Table 39). This increase, however, was not continuous since two groups

TABLE 39.—FIXED PROPERTY TURNOVER AND FIXED PROPERTY EXPENSE PER \$100 OF SALES, BY SIZE OF ASSOCIATION, 146 ASSOCIATIONS OWNING BUILDINGS, 1935.

Sales Per Association		Number of Associations	Fixed Property Expense Per Dollar of	Fixed Property Turnover
Range	Average		Fixed Property	
Less than \$25,000	\$20,525	3	(Cents) 16.7	7.6
\$ 25,000 - 50,000	39,649	33	14.3	8.9
50,000 - 75,000	59,151	23	18.1	12.3
75,000 - 100,000	86,182	23	14.8	9.7
100,000 - 150,000	120,479	32	17.0	14.4
150,000 - 200,000	180,440	17	16.4	13.6
200,000 or more	278,502	15	18.2	19.2
All	\$108,308	146	16.5	13.4

of associations showed decreases from the turnovers of the next smaller groups. Nearly all of this increase in efficiency in use of fixed property was reflected in lower fixed property expense per \$100 of sales, since fixed property expense in relation to the value of fixed property did not increase significantly as the size of associations increased.

### Size and Inventory Turnover

Efficiency in use of inventories increased as the size of association became larger. Although the increase was not consistent, the

TABLE 40.—AVERAGE INVENTORY TURNOVER, BY SIZE OF ASSOCIATION, 134 ASSOCIATIONS WHOSE SUPPLY SALES WERE 40 PER CENT OR MORE OF TOTAL SALES, 1935.

Sales Per Association		Number of Associations	Inventory Turnover
Range	Average		
Less than \$25,000	\$20,870	6	15.8
\$ 25,000 - 50,000	41,839	25	18.4
50,000 - 75,000	60,287	22	19.6
75,000 - 100,000	85,274	23	19.5
100,000 - 150,000	120,475	30	20.7
150,000 - 200,000	180,266	16	25.0
200,000 or more	280,044	12	23.8
All	\$108,850	134	21.6

turnover in the largest associations was 50 per cent greater than in the smallest ones, (Table 40).

### Size and Days Sales Outstanding

Size of association evidently had considerable influence on the effectiveness with which credit sales were handled. The number of days of supply sales outstanding as accounts and notes receivable declined from 35 in the smallest associations to 10 in the largest ones, (Table 41). This difference could have occurred because the smaller associations had more liberal credit policies or because they used less effective collection practices, or both. Actually, credit sales were a smaller percentage of supply sales in the smaller associations than in the larger ones. Thus, the difference evidently resulted from differences in collection practices, which is borne out by the fact that receivables at the end of 1935 amounted to 64.5 per cent of credit sales in 1935 in the smallest associations, compared with only 16 per cent in the largest associations, (Table 41).

Since the value of receivables used here is their net value after chargeoffs and allowances for bad debts had been deducted, it should be pointed out that the large percentage of credit sales outstanding as receivables may have resulted in part from differences in policies

TABLE 41.—NUMBER OF DAYS OF SUPPLY SALES OUTSTANDING, BY SIZE OF ASSOCIATION, 145 ASSOCIATIONS IN WHICH SALES WERE CLASSIFIED, 1935.

Sales Per Association	Number of Associations	Supply Sales as Per Cent of Total Sales	Credit Sales as Per Cent of Supply Sales	Receivables as Per Cent of Credit Sales	Number of Days' Supply Sales Outstanding
Less than \$25,000	6	54.6	17.4	64.5	35.0
\$ 25,000 - 50,000	31	51.3	13.9	40.3	17.4
50,000 - 75,000	22	60.3	17.8	34.0	18.9
75,000 - 100,000	23	62.2	18.3	21.8	12.4
100,000 - 150,000	31	60.2	21.4	13.5	12.4
150,000 - 200,000	17	61.4	21.7	14.3	10.0
200,000 or more	15	58.5	19.9	16.2	10.1
All	145	59.5	19.8	20.1	12.4

of charging off old accounts and of establishing allowances for bad debts. Large associations charge off relatively more of the older accounts and notes and made more liberal allowances for doubtful receivables. This is evident for accounts receivable from Table 42. A larger proportion of the accounts were more than 12 months old in the small associations than in the larger ones. This may have resulted in part from better collection practices on the part of the larger associations but to some extent at least, was due to the fact that larger associations charged off relatively more of their aged accounts. This conclusion is further emphasized by the fact that with the exception of the two smallest groups of associations, the

percentage of accounts considered doubtful declined as the size of association increased. That the large associations also set up larger allowances for bad debts relative to the amount of doubtful accounts also is shown in Table 41. In the larger associations, allowances for doubtful accounts were approximately two-thirds of the amount of accounts considered doubtful. In the smallest association, despite the fact that managers considered less of the accounts doubtful, allowances amounted to only 44 per cent of accounts thought to be doubtful.

TABLE 42.—PER CENT OF ACCOUNTS OVER 12 MONTHS OLD, PER CENT OF ACCOUNTS CONSIDERED DOUBTFUL, AND ALLOWANCES FOR BAD DEBTS AS PER CENT OF ACCOUNTS CONSIDERED DOUBTFUL, BY SIZE OF ASSOCIATION, 250 ASSOCIATIONS, DECEMBER 31, 1935.\*

Sales in Thousands of Dollars	Number of Associations	Net Value of Accounts Receivable	Per Cent of Accounts Over 12 Months Old	Per Cent of Accounts Considered Doubtful†	Allowances for Bad Debts as Per Cent of Accounts Considered Doubtful
Less than 25	20	\$ 928	51	28	44
25 - 50	61	1,095	42	38	56
50 - 75	43	2,312	48	52	52
75 - 100	35	2,008	38	36	67
100 - 150	46	2,434	30	33	68
150 - 200	23	4,013	26	30	56
200 or more	22	4,513	33	26	66
All	250	\$2,234	36	33	59

\*Taken in part from Table 70, unpublished section of *Farmers' Cooperative Marketing and Purchasing Associations*, a thesis by E. G. Schiffman.

†Based on estimates of managers.

### Why Costs Declined as Size Increased

Thus, there was a significant tendency for each of the four operating ratios to improve as the size of the association increased. Large associations with more work to do can keep its employees and equipment busy a greater percentage of the time than can small associations. Also, they can develop some specialization of labor and, because of the volume of work to be done, can afford the purchase of equipment which reduces the amount of manual labor necessary, both of which also increase the efficiency with which labor is used. Because their volume of sales of even minor products is substantial, they can maintain inventories of such products more nearly in line with sales. Since inventories can be kept low in relation to sales, buildings which provide storage space for inventories, can also be kept low relative to the volume of business in large associations. Because of specialization in record-keeping, they are able to keep better informed as to the status of outstanding accounts, which promotes a more effective handling of credit sales than is possible in small associations. Furthermore, the managers of large associations had more business experience than the man-

agers of smaller exchanges and elevators. In 1935, 79 per cent of the managers of associations doing \$150,000 or more of business in that year had 10 years or more experience as managers and employees of cooperative associations, whereas only 43 per cent of the managers of associations selling less than \$50,000 of products and supplies had that much experience.<sup>8</sup>

These tendencies and numerous other less important ones which might be listed are responsible for the increases in efficiency with which the labor, fixed property, inventory, and other elements of merchandizing cost are used as volume of sales increases. Such tendencies make for a decline in the various classes of expense and in total costs as the size of associations increases.

The full effect of increases in operating ratios, however, was not reflected in costs per \$100 of sales, because expense per unit of labor, and, to some extent, expense per unit of other cost-creating elements tended to increase as the size of association increased. As has been seen, this was especially true of the manager's salary and wages of employees.

Thus, the effect of size on operating costs results from two tendencies. One is the tendency for increased efficiency as size increases, which lowers cost per unit of sales and the other is increased expense per unit of expense-creating elements which tends to raise costs per unit of sales. Since efficiency increased more rapidly than the level of expense, costs per \$100 of sales declined with increases in size of the 161 associations included in this study.

### **SMALL ASSOCIATIONS AND COSTS**

Since there is this tendency for operating ratios, or efficiency, to increase and costs to decline as the size of association increases, the small association would seem to be at a decided disadvantage as a merchandizing unit. This situation is of vital concern to Missouri Cooperatives not only because so many of them are small but also because many small ones are so located as to make the development of a large volume of sales impossible.

Actually, however, the above tendency is not so pronounced as to preclude small associations from operating efficiently. There is then a possibility, as the following analysis will show, for small associations to handle products and supplies at low cost in spite of their size.

#### **Small Associations and Management and Labor Expense**

The fact that average sales per man increased as associations be-

<sup>8</sup>Mo. Agr. Exp. Sta. Bul. 389, page 53, Table 60.

came larger does not mean that all small associations had low sales per man whereas all large exchanges had high sales per man. Among the 27 smallest associations, sales per man were in excess of \$25,000 in two and from \$20,000 to \$25,000 in six additional ones, (Table 43). Likewise several large associations had low sales per man. The

TABLE 43.—NUMBER OF ASSOCIATIONS HAVING EACH SPECIFIED VOLUME OF SALES PER MAN, BY SIZE OF ASSOCIATION, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales Per Man in Thousands of Dollars	Sales in Thousands of Dollars						All
	Less than 50	50 - 75	75 - 100	100 - 150	150 - 200	200 or more	
	Number of Associations						
Less than 15	11	4	..	1	..	1	17
15 - 20	8	10	8	6	2	1	35
20 - 25	6	7	8	14	4	2	41
25 - 40	2	2	2	9	8	5	28
40 or more	..	..	1	..	1	5	7
All	27	23	19	30	15	14	128

average was higher in the larger associations only because a greater proportion of the larger associations were able to use labor and management more effectively than the smaller associations.

Large sales per man were associated with low expense for management and labor per \$100 of sales regardless of whether they were attained in large or in small associations. When sales were from \$20,000 to \$25,000 per man, management and labor expense was \$3.10 in small associations and \$3.51 in the largest ones, (Table 44). The same relationship held for other groups of associations

TABLE 44.—MANAGEMENT AND LABOR EXPENSE PER \$100 OF SALES, BY SIZE OF ASSOCIATION AND SALES PER MAN, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales Per Man in Thousands of Dollars	Sales in Thousands of Dollars				All
	Less than 50	50 - 100	100 - 150	150 or more	
	Expense Per \$100 of Sales				
Less than 15	\$4.28	\$4.61	*	*	\$4.84
15 - 20	3.68	3.48	\$3.87	\$3.81	3.67
20 - 25	3.10	3.41	3.38	3.51	3.41
25 - 40	*	2.74	2.46	2.45	2.46
40 or more	....	*	....	1.95	1.95
All	\$3.56	\$3.43	\$3.25	\$2.86	\$3.13

\*Less than three associations.

with similar sales per man. Thus among associations with similar operating ratios there was no tendency for costs per unit of sales to decline as the volume of sales increased. The lower average management and labor expense in the larger associations therefore was due to their higher average sales per man, more easily obtained in large associations, rather than any other advantage of size.

### Small Associations and the Wage and Salary Level

In fact, there was more of a tendency for costs to increase with size of association than to decline under such conditions, for the wage and salary level raised as associations became larger. Even under conditions of similar sales per man, managers' salaries increased quite sharply as the size of association became larger. For example, the average salary in associations having from \$20,000 to \$25,000 of sales per man was \$121 in the largest associations, compared to \$66 in the smallest associations, (Table 45). On the other

TABLE 45.—AVERAGE SALARY OF MANAGER, BY SALES PER MAN AND SIZE OF ASSOCIATION, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales Per Man in Thousands of Dollars	Sales in Thousands of Dollars			
	Less than 50	50 - 100	100 - 150	150 or more
	Average Salary Per Month			
Less than 15	\$53	\$81	*	*
15 - 20	67	75	\$ 91	\$115
20 - 25	66	88	103	121
25 - 40	47	88	91	115
40 or more	..	*	..	127
All	\$59	\$82	\$ 97	\$119

\*Only one association. See Table 43 for number in each group.

hand, under conditions of similar size, there was slight, if any, tendency for salaries of managers to increase as sales per man became larger. For associations having from \$50,000 to \$100,000 of business in 1935, salaries averaged \$81 per month in four associations with lowest sales per man and \$88 per month in the four with highest sales per man, (Table 45).

These same relationships between efficiency and wages of employees and between size of associations and wages were found. Under conditions of similar efficiency, wages increased slightly with size of association and remained relatively constant with increasing efficiency in use of labor under conditions of similar size, (Table 46).

Why the level of wages and salaries were associated with the size of association rather than efficiency was not evident from the data. Since size of association was interrelated with size of town,

TABLE 46.—AVERAGE WAGES OF EMPLOYEES, BY SALES PER MAN AND SIZE OF ASSOCIATION, 128 ASSOCIATIONS OWNING TRUCKS, 1935.

Sales Per Man in Thousands of Dollars	Sales in Thousands of Dollars			
	Less than 50	50 - 100	100 - 150	150 or more
	Average Wages Per Month			
Less than 15	\$34	\$35	*	*
15 - 20	36	43	\$51	\$53
20 - 25	44	50	53	61
25 - 40	*	53	51	54
40 or more	..	*	..	59
All	\$36	\$45	\$52	\$57

\*Only one association. See Table 43 for number in each group.

it might be thought that the higher wages resulted from the location of large associations in larger towns. Earlier analyses, however, show no relationship between size of town and the wage and salary levels, (Tables 15 and 16).

### Small Associations and Fixed Property Expense

As seen earlier, average fixed property turnovers increased as the size of associations increased. Nevertheless, some large associations had low turnovers and some small associations had high turnovers. In fact, the fixed property turnover was 20 or more in one-fourth of the thirty-six smallest associations which owned buildings, whereas it was less than 15 in six of the fifteen largest associations, (Table 47).

TABLE 47.—NUMBER OF ASSOCIATIONS OWNING BUILDINGS HAVING SPECIFIED FIXED PROPERTY TURNOVERS AND NUMBER RENTING BUILDINGS, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Fixed Property Turnover	Sales in Thousands of Dollars					All
	Less than 50	50 - 75	75 - 100	100 - 150	150 - 200	
Number of Associations						
Own buildings						
Less than 5	5	1	3	..	1	10
5 - 10	10	5	4	8	2	30
10 - 15	6	9	4	4	5	33
15 - 20	6	2	5	7	3	24
20 - 30	3	..	3	7	3	20
30 - 50	3	6	3	4	3	21
50 or more	3	..	1	2	..	8
Total	36	23	23	32	17	146
Rent buildings	8	4	1	1	1	15

The tendency for fixed property expense to decline with the size of the association was due entirely to the increase in average fixed property turnover. When associations with similar turnovers were considered, fixed property expense per unit of sales did not decline as the associations became larger but remained relatively stable. For example, this expense remained between \$1.15 and \$1.29 per \$100 of sales for four widely different size groups of associations

TABLE 48.—FIXED PROPERTY EXPENSE PER \$100 OF SALES, BY FIXED PROPERTY TURNOVER AND SIZE OF ASSOCIATIONS, 146 ASSOCIATIONS OWNING BUILDINGS, 1935.

Fixed Property Turnover	Sales in Thousands of Dollars				All
	Less than 50	50 - 100	100 - 150	150 or more	
Expense Per \$100 of Sales					
Less than 10	\$2.52	\$2.56	\$2.03	\$1.84	\$2.24
10 - 20	1.15	1.26	1.29	1.27	1.26
20 - 50	.74	.88	.69	.72	.74

having fixed property turnovers ranging from 10 to 20, (Table 48). A similar stability of expense per unit of sales was evident among those associations whose turnovers were from 20 to 50. There was, however, a noticeable decline in fixed property expense as size of

association increased among the associations least efficient in the use of fixed property but this was due to the fact that average fixed property turnovers was not held constant in this group since they rose from 5.2 to 7.0 as sales increased, (Table 49). That the fixed

TABLE 49.—AVERAGE FIXED PROPERTY TURNOVERS, BY FIXED PROPERTY TURNOVERS AND SIZE OF ASSOCIATION, 138 ASSOCIATIONS OWNING BUILDINGS, 1935.\*

Fixed Property Turnover	Sales in Thousands of Dollars				All
	Less than 50	50 - 100	100 - 150	150 or more	
	Fixed Property Turnover				
Less than 10	5.2	5.3	7.2	7.0	6.0
10 - 20	14.3	13.6	14.7	13.7	13.9
20 - 50	30.1	29.0	28.0	29.1	28.8

\*Excluding 8 with turnovers of 50 or more.

property turnovers remained relatively constant as sales increased in each other group according to turnover is evident from Table 49.

As seen earlier, fixed property expense per \$100 of sales was affected not only by fixed property turnover but also by the relative amount of money spent on each dollar's worth of fixed property. In this analysis, fixed property expense per dollar of fixed property remained approximately the same for various sizes of associations of similar efficiency in the use of fixed property but increased with efficiency as size of associations remained similar, (Table 50).

TABLE 50.—FIXED PROPERTY EXPENSE PER DOLLAR OF FIXED PROPERTY, BY FIXED PROPERTY TURNOVER AND SIZE OF ASSOCIATION, 138 ASSOCIATIONS OWNING BUILDINGS, 1935.\*

Fixed Property Turnover	Sales in Thousands of Dollars				All
	Less than 50	50 - 100	100 - 150	150 or more	
	Fixed Property Expense in Cents Per Dollar of Fixed Property				
Less than 10	13.2	13.5	14.5	12.8	13.5
10 - 20	16.4	17.0	18.9	17.4	17.6
20 - 50	22.3	25.4	19.4	20.9	21.3

\*Excluding 8 with turnovers of 50 or more.

### Small Associations and Ownership of Buildings

It was found earlier that renters had less fixed property expense per \$100 of sales than those associations which owned buildings.

Smaller associations were taking greater advantage of this fact because relatively more of them than of the larger associations were renting buildings. Twelve, or one-sixth of the associations with less than \$75,000 of sales were renters, whereas only 3 of the 90 largest associations rented their places of business, (Table 47).

### Small Associations and Inventory Expense

Although average inventory turnovers increased as associations became larger, many associations differed widely from the average. Among the 31 smallest associations, the average inventory turnover

was 18.1 but six of them had turnovers of 35 or more, (Table 51).

Average inventory expense also declined as the size of association increased but this evidently was due entirely to the increase in average turnover and not to any other advantage of size. Under conditions of similar turnovers, inventory expense per \$100 of sales

TABLE 51.—NUMBER OF ASSOCIATIONS HAVING SPECIFIED INVENTORY TURNS, BY SIZE OF ASSOCIATION, 134 ASSOCIATIONS IN WHICH SUPPLIES WERE 40 PER CENT OR MORE OF SALES, 1935.

Inventory Turnover	Sales in Thousands of Dollars						All
	Less than 50	50 - 75	75 - 100	100 - 150	150 - 200	200 or more	
	Number of Associations						
Less than 15	8	5	5	6	1	2	27
15 - 20	5	4	3	6	3	3	24
20 - 25	5	4	6	4	4	1	24
25 - 35	7	5	2	5	5	2	26
35 - 50	5	2	3	7	3	2	22
50 or more	1	2	4	2	..	2	11
All	31	22	23	30	16	12	134

did not decline significantly as the associations became larger but remained relatively stable. Among the associations with turnovers ranging from 15 to 25, average inventory expense per unit of sales for the four different groups of associations according to size varied only from 37.8 to 44.7 cents, a rather insignificant difference, (Table 52). For other levels of efficiency in use of inventories, the relation between size and inventory expense was similar.

Under conditions of similar size, however, inventory expense per unit of sales declined sharply with increasing turnovers, (Table 52).

TABLE 52.—INVENTORY EXPENSE PER \$100 OF SALES, BY INVENTORY TURNS AND SIZE OF ASSOCIATION, 134 ASSOCIATIONS WITH SUPPLY SALES 40 PER CENT OF MORE OF TOTAL SALES, 1935.

Inventory Turnover	Sales in Thousands of Dollars				All
	Less than 50	50 - 100	100 - 150	150 or more	
	Expense in Cents Per \$100 of Sales				
Less than 15	78.9	77.3	75.5	*	69.2
15 - 25	37.8	39.8	38.7	44.7	41.6
25 - 50	26.6	23.9	25.2	23.7	24.4
50 or more	*	14.2	17.5	13.4	14.3
All	43.0	39.8	38.7	32.8	36.7

\*Only one association. See Table 51 for number in each group.

### Small Associations and Credit Expense

Likewise, it was possible for small associations to have a small number of days' sales outstanding although generally a relatively larger volume of receivables were outstanding in the smaller associations than in the larger ones. In fact, 15 of the 44 smallest associations had less than 8 days of supply sales outstanding at the end of 1935, (Table 53). A small number of days of supply sales outstanding were just as effective in reducing credit expense per \$100 of sales in small associations as in large ones.

TABLE 53.—NUMBER OF ASSOCIATIONS HAVING EACH SPECIFIED NUMBER OF DAYS OF SUPPLY SALES OUTSTANDING AS RECEIVABLES, BY SIZE OF ASSOCIATION, 161 ASSOCIATIONS, 1935.

Number of Days of Supply Sales Outstanding	Sales in Thousands of Dollars						All
	Less than 50	50 - 75	75 - 100	100 - 150	150 - 200	200 or more	
	Number of Associations						
Less than 4	9	6	4	4	3	1	27
4 - 8	6	2	6	8	6	6	34
8 - 12	8	4	8	7	4	4	35
12 - 16	4	2	2	6	3	1	18
16 - 20	4	7	1	2	1	1	16
20 - 30	6	3	1	6	1	1	18
30 or more	7	3	2	..	..	1	13
All	44	27	24	33	18	15	161

### Summary

The foregoing analysis has emphasized two points of extreme importance to many small associations in this state. The first is that relative efficiency and not size of association determined the level of each operating expense per unit of sales. It was seen that a given volume of sales per man brought lower management and labor expenses per \$100 of sales in the smaller associations than in the larger ones because large associations were paying higher wages and salaries to managers and employees even when the efficiency with which labor was used was no higher than in the smaller associations. A high fixed property turnover gave the small association the same expense per unit of sales as the large association. Similar relationships held for the other expenses studied. Thus, high operating ratios in small associations were just as effective in reducing expenses as in the larger associations.

Second, that although high operating ratios were more common in the larger associations, such were possible of attainment even in associations of less than \$50,000 of sales. That it is harder to obtain high operating ratios in the smaller associations does not keep many small associations from being almost, if not equally, as efficient as the largest ones in the use of labor, building, equipment and inventories.

### SIZE OF ASSOCIATION AND PRICES

The farmer who patronizes a cooperative association is not only interested in the operating costs of the association and the margin which it takes for handling products and supplies for him, but also with the prices which the association is able to get for his products and the prices it has to pay for supplies. Ordinarily a large association, because of its larger volume of business, would be expected to have an advantage in buying supplies and selling products

which might result in more favorable prices to patrons of large associations.

Although this study was concerned only with operating expense and not with prices received for products and paid for supplies, other information available indicates that, for most associations in this state, prices received for products and paid for supplies are the same for both small and large associations. Approximately one-half of the products sold by cooperative exchanges in 1935 were sold through the central cooperative associations of the Missouri Farmers' Association such as the poultry processing and egg packing plants located about the state. These central organizations pay the same price to all associations regardless of size.

A still greater proportion, nearly two-thirds, of the supplies bought by local cooperatives, were obtained from central cooperative wholesaling associations which also make no concessions for quantity purchases. Thus, those small associations affiliated with the Missouri Farmers' Association suffer no disadvantage from the standpoint of prices received for products or paid for supplies which were handled through these large-scale central associations.

### **TYPE OF BUSINESS AND COSTS**

It might be expected that the type of business done by the cooperative associations might have an influence on certain classes of operating expense per unit of sales. For example, it might be expected that among elevators in which grains were a large percentage of sales, sales per man would be higher and management and labor expense per \$100 of sales lower than among associations doing little grain business, because elevators usually are equipped to handle large quantities of grain by machinery. Also, because the investment in buildings and equipment is large and because grain is a seasonal product, it might also be thought that fixed property turnovers would be low for elevators handling little but grain and high for those associations handling little grain. Fixed property costs, then, would be relatively high for elevators and low for associations not handling grains. An analysis of these data failed to disclose any significant relationship between type of business and operating ratios or costs. For this purpose, sales were classified into three groups; grains; produce, or farm products other than grain; and supplies other than feed grains. A cost accounting study of the cost of handling various lines of products and supplies, however, might bring out differences between costs for various lines not evident from this analysis.

## SUMMARY

Expenses of 161 cooperative exchanges and elevators in Missouri averaged \$6,211 per association or nearly \$6 per \$100 of sales.

One-half the expenses of cooperative associations was for management and labor, one-fifth was fixed property expense and one-tenth, general expense. Inventory, credit and net truck expense each were about 5 per cent of the total.

The cost of doing business among Missouri cooperatives was relatively low as compared to costs of similar organizations in other states and to costs of other retailers in this state.

Two-thirds of the management and labor expense was wages of employees and nearly one-third, salary of the manager.

Associations employed the equivalent of 3.4 men per association in 1935 in addition to the manager.

Depreciation and interest were the largest items of fixed property expense. They made up 70 per cent of the total.

The important items of general expense were lights, power and water; office supplies, postage and printing; interest; and telephone and telegraph.

Inventory expense was largely interest and insurance on stocks of merchandise.

Credit expense was principally uncollectible accounts and interest on notes outstanding.

Operating expenses in truck-owning associations were about \$1.00 per \$100 of sales more than in associations of similar size not owning trucks.

Operating expenses per \$100 of sales varied from \$2 to more than \$13. One-half of the associations had costs between \$5 and \$7 per \$100 of sales.

Management and labor expense varied from as low as 99 cents to as high as \$7.46 per \$100 of sales because of variations in sales per man and in the average wage and salary scale paid by the associations.

The wage and salary scales appeared not to be influenced by size of town or the geographic area of the state in which the association was located. They seemed to depend on size of association only. The average salary of managers was \$86.81 per month and the average wage of employees was \$51.00 per month.

Fixed property expense per unit of sales was lowest among the associations which rented rather than owned their buildings.

Fixed property expense among associations owning buildings varied from 11 cents to \$6.28 per \$100 of sales because of the differences in the efficiency with which fixed property was used, as measured by fixed property turnover, and because of differences in fixed property expense per unit of fixed property.

Inventory expense varied from 10 cents to 98 cents per \$100 of sales. This was due primarily to variations in the efficiency with which inventory was used, as measured by inventory turnover.

Credit expense varied among associations because of differences in the relative amount of credit outstanding as measured by the number of days supply sales outstanding as receivables.

There appeared to be little, if any, interrelationship between the various operating ratios or measures of efficiency stated above. In other words, there was little to indicate that associations efficient in the use of one factor of expense were also efficient in the use of any other.

Because of the importance of management and labor expense and fixed property expense as classes of expense, sales per man and fixed property turnover had considerable influence on the total expenses of associations.

There was a tendency for most operating ratios to increase with the size of association which tended to cause operating expenses to decline as the size of association increased.

The fact that the average operating ratios were higher in the larger associations does not mean that all small associations had low operating ratios and all large associations had high operating ratios. There was sufficient variation in ratios among the different size groups of associations to indicate that small associations might operate efficiently. Small associations were benefited also by the fact that wage and salary levels and various other costs per unit of expense-creating elements tended to rise as the size of the association increased.

Because central processing plants and central wholesaling associations have been established through which products and supplies may be handled for all associations affiliated with the Missouri Farmers' Association, the small local associations in this setup can buy supplies and sell products as effectively as large associations.

Type of business seemed to have little effect on the cost of doing business among the associations studied.