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Cost Plan for Automobile-rental Business

BY SIDNEY S. BOURGEOIS, JR.

It is doubtful that anyone can give direct information on the origin of the driverless-car rental business. The idea probably originated about the time when automobiles were becoming generally accepted by the public, possibly about fifteen years ago.

The business has grown to nationwide proportions. There are now at least two companies with branches, or some manner of representation, in nearly all principal cities of the United States. The service is used by salesmen, business men, pleasure seekers, tourists, etc., and even owners when their cars are not available for use. Some of the concerns rent out trucks as well as passenger cars.

This article suggested itself when the writer was called upon to install a plan of accounts for a company of this kind, and the files of neither the American Institute of Accountants nor the National Association of Cost Accountants could supply any information whatever on existing accounting methods of other similar concerns. Consequently, this paper will present the substance of the plan of general and cost accounts instituted in the engagement mentioned. It seems that the business is of too recent origin to have developed much accounting material, or possibly there is, or has been, some reluctance to disseminate such information. There are few businesses in which it is more important to know costs. The failure of many of the companies can be traced to ignorance of the true cost of operating their vehicles.

Where various classes or makes of vehicles with varying initial and upkeep costs are rented, it is essential to segregate both revenues and costs, if not on individual vehicles, at least as to classes of vehicles. A knowledge of the degree of profitableness or unprofitableness of classes as a minimum is indispensable for the purpose of scientifically establishing the rental rates.

This question—Class or individual costs?—must be answered at the outset by the accountant in planning the cost installation. The choice is a matter of judgment and depends somewhat upon

whether the owners or managers are content with knowing costs and revenues of classes of vehicles or are insistent upon knowing and studying the costs and revenues of each vehicle. A system based on class costs has for its recommendation ease of operation with results reasonably trustworthy. Conversely, a system based on individual car revenues and costs, while involving greater effort, has for its recommendation an amplification of class costs—the ascertainment of what relationship the individual vehicle costs bear to the composite costs on such vehicles, thereby making it possible to correct or eliminate, within each class of vehicle, units with unfavorable tendencies. For example, the total cost and the items making up the total cost of operating a certain class of cars may be satisfactory, but by inquiring into individual car costs one may find, in this class, cars running below the average on certain cost items while others may be running much higher than the average on the same items. With the information furnished by the records on individual cars the application of corrective measures to the excessive costs may be possible; but it would be impossible to apply them with only class costs, because the variations on individual cars within the class affected could not be known under this method of cost finding.

Whether costs are determined by classes or on an individual basis, it is wise to ascertain revenues derived from each vehicle in service. As will be seen later, this procedure forces an accounting for all mileage, and is an important safeguard against misappropriation of revenues.

The outline of the plan in this article is based on individual costs, but this must not be taken as an advocacy of determining individual costs as against class costs. Since individual costs merely amplify class costs, it follows that the plan herein outlined may be adapted to either method of cost determination.

REVENUE FROM RENTALS

It has been found advisable to separate revenue from rentals in three accounts, which may appear in the general ledger under the titles of mileage, insurance and hourly charges. The mileage account should contain only revenue based on definite rates per mile. The insurance account consists of fees collected from renters to cover estimated insurance costs. This account represents income and must not be confused with insurance accounts representing cost or expense. Hourly charges consist of revenue

from cars rented by the hour. If both mileage and hourly fees are assessed to a renter for the use of a car, the revenue should be divided into its respective accounts.

The usual procedure in renting an automobile is simple. The person desiring a car makes application in writing at the office of the company, furnishing whatever information is needed for identification purposes. The applicant agrees to certain rental conditions, among which may be the rate, precautions to be taken to prevent theft, fixing of responsibility for damage or injury, if any, and so on. The applicant is then furnished with a car of his choice and is given a memorandum of the mileage reading shown by the speedometer or hubometer at the time he takes possession of the machine. When the automobile is returned the mileage is again read for purposes of determining the number of miles traveled and computing charges at the agreed rate per mile, to which is added insurance, as well as hourly fees, if any. The transaction is completed when the charges are collected. The bulk of the business is done on a cash basis, but charge accounts are often opened for frequent renters.

The memoranda or bills are arranged in pad form in duplicate, consecutively numbered, the originals being perforated in order that they may be removed and given to the renters. Provision is made on both copies for identification of the car, record of outgoing and incoming mileage, and amount of mileage, insurance and hourly fees to be charged. These are summarized daily to show information necessary for purposes of accounting for cash and as a posting medium to the general-ledger accounts of mileage, insurance and hourly charges.

The first step in keeping the detailed records of revenues is to post the daily earnings shown by the bills to the individual car records (Car record—revenues, exhibit 1, page 244). A separate record must be kept for each vehicle in service. At the end of every accounting period, these records will show the total productive and unproductive mileage (commonly referred to as "dead" mileage to indicate mileage for which no revenue is received) and the earnings, properly classified, derived from each vehicle. It is, therefore, only a question of dividing the total earnings by the sum of the productive and unproductive miles in order to determine the average rate earned per mile on each vehicle. The revenues shown by these records are, of course, controlled by the three revenue accounts in the general ledger.

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CAR RECORD

Exhibit 1

CAR Ford Sedan

REVENUES

NO. 16

Date	Bill No.	Last Mileage Reading	Present Mileage Reading	MILEAGE			AMOUNT EARNED		
				Productive	Dead	Ratio	Mileage	Insurance	Hourly
1928									
Jan 1	6254	-0-	25	24	1	14	396	25	-0-
" 2	6278		60	35	-0-	.	490	25	-0-
" 3	6289		75	13	2	.	172	25	-0-

This record serves the dual purpose of accounting for every mile traveled by the various vehicles and exposing the number of unproductive miles. When no such records have previously been kept and unproductive mileage has at some time been revealed, the extent of it has been found surprising. Some unproductive mileage is excusable, but experience will demonstrate that it can be held within certain limits if kept under observation and properly controlled.

As will be seen by reference to exhibit 1, the car record automatically forces an accounting for all miles consumed, whether productive or unproductive. Its value, as a means of safeguarding and protecting the revenues of the business, is obvious. By summarizing the gross earnings of each class of vehicle, they may be contrasted with the summarized costs. The difference will, of course, represent the profit or loss of each class.

COSTS AND EXPENSES

The cost and expense elements constituting the general accounts are as follows:

- Direct costs:
 - Car depreciation
 - Gas and oil
 - Parts, accessories and repairs
 - Direct labor

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- Indirect labor
- Insurance
- Car licences
- Miscellaneous direct costs
- General expenses:
 - Advertising
 - Executive and managerial salaries
 - Office salaries
 - Rent
 - Property taxes and operating licences
 - Light, heat, power and water
 - Depreciation—furniture and fixtures
 - Accountants' and attorneys' fees
 - Stationery and office supplies
 - Telephone and telegraph
 - Traveling
 - Stolen cars
 - Rewards for recovery of cars stolen
 - Miscellaneous general expenses
- Financial expenses:
 - Interest and finance charges
 - Bad debts
 - Bad cheques
 - Etc.

Exhibit 2

CAR RECORD

CAR *Ford Sedan*
NO. 16

COSTS

MONTH	DEPRECIATION	GAS & OIL	PARTS, AC- CESSORIES & REPAIRS	LABOR	INSURANCE	LICENSE	MISCELLAN- EOUS	GENERAL EXPENSES	TOTAL
<i>1928</i>									
<i>January</i>	<i>24.76</i>	<i>7.85</i>	<i>10.75</i>	<i>9.60</i>	<i>1.75</i>	<i>1.50</i>	<i>2.50</i>	<i>10.90</i>	<i>79.61</i>

The direct costs are summarized monthly on the detailed record of costs (Car record—costs, exhibit 2). As in the case of revenues, a cost record is maintained for each vehicle in service.

The general accounts are kept as they usually are in any plan of general accounting. At the end of each month journal entries are made to indicate application of costs and expenses for that month to the individual cars, and are in substance as follows:

Cost of car rentals..... XXX
 Applied direct costs..... XXX
 Application of following direct costs for month
 of _____ to cost of car rentals:

(Accounts are itemized here)

Cost of car rentals	xxx
Applied general and financial expenses	xxx
Application of following general and financial expenses for month of _____ to cost of car rentals:	
(Accounts are itemized here)	

The purpose of these two entries is merely to show in single accounts the total amounts of costs and expenses applied against the individual cars. At the end of the year these accounts are offset one against the other by reverse entries.

Consideration will now be given to the various cost and expense items and the method of allocating them to the individual vehicles and coördinating them with the general books.

Car depreciation. Depreciation is, at least, one of the most important elements of cost in the business, and its scientific computation is essential to the determination of accurate costs.

There are two elements to be considered in estimating the useful life of an automobile: they are, in the order of their importance, (1) probable mileage to be obtained from the car and (2) lapse of time. It appears to the writer that the first element is so predominantly important as practically to nullify the importance of the second. In other words, one can come very close to arriving at accurate depreciation by writing off from month to month the depreciable value (cost less estimated resale value) on the basis of miles consumed. As an illustration, assume the cost of an automobile to be \$1,200, with an estimated resale value of \$300 after the car has run 10,000 miles, which we shall say is the mileage to be expected with reasonable upkeep under normal conditions. The depreciable value consequently would be \$900 or 9 cents per mile. Therefore, if this car consumes a mileage of say 1,000 miles in a month, the amount of depreciation for that month would be \$90.

As in any other line of business, past experience must, of course, be drawn upon in establishing the length of useful life of an automobile and in determining its probable worth at the expiration of that life.

The depreciation record (exhibit 3) will serve as the detail of both the automobile-asset account and reserve-for-depreciation account and must be controlled by these two general-ledger accounts. It will be noted that it supplies all information necessary for the monthly computation of depreciation on the individ-

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DEPRECIATION RECORD

Exhibit 3

-CARS-

DATE PURCHASED Jan 1 1978

SERIAL NUMBER _____

CAR Ford Sedan

MOTOR NUMBER _____

NUMBER 16

PROBABLE LENGTH OF USEFUL LIFE 10,000

COST.....\$750.00

ESTIMATED RESALE VALUE.....\$200.00

AMOUNT TO BE DEPRECIATED.....\$550.00

.....\$ 5 1/2 Cents

RECORD OF DEPRECIATION:

MONTH	YEAR		
	<u>1978</u>	<u>19</u>	<u>19</u>
JANUARY <u>632 miles</u>	<u>3476</u>		
FEBRUARY			
MARCH			
APRIL			
MAY			
JUNE			
JULY			
AUGUST			
SEPTEMBER			
OCTOBER			
NOVEMBER			
DECEMBER			
TOTAL			

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ual cars. Compositely, these records form the basis of the monthly debit to car depreciation and credit to reserve for depreciation in the general books. The monthly mileage, for the purpose of computing individual car depreciation, is obtained from the individual revenue records (exhibit 1). After the depreciation for the month is entered on the depreciation record (exhibit 3), the amount thereof is posted or transferred to the individual cost record (exhibit 2). The car-depreciation account in the general ledger is equal to the amount of depreciation shown by the sum of all the detailed car records (exhibit 2).

Exhibit 4

DAILY
GAS & OIL CONSUMPTION

DATE Jan. 1 1928

CAR - NO.	FORDS		CHEVROLETS		BUICKS		TRUCKS		Gas	Oil
	Gas	Oil	Gas	Oil	Gas	Oil	Gas	Oil		
1	5	1			5	1/2	4	1/2		
2			5	1			3	1		
3	4	1/2	4	1/2			5	1		
4										
5										
6										
7										
8										
9										
10										

Gas and oil. Gas and oil are included as part of the service to renters. Therefore, it is necessary to determine the amount consumed by the various cars. Moreover, sufficient protection should be afforded to insure reasonably that consumption will be for productive uses. To accomplish these two purposes it is necessary to keep a perpetual inventory in the general books, to which purchases are debited and consumption is credited. Separate inventories of gas and oil may be kept if desired.

Since purchases are made in relatively large quantities, the matter of accounting for this element is obviously simple. Consumption, however, offers a problem that involves diligence and

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Careful gauging in order to obtain accurate results. A satisfactory solution has been obtained by the innovation of a daily record of gas and oil consumption (exhibit 4, page 248). The information called for by this form is inserted daily at the time the automobiles are fed the fuel and lubricant. The consumption units are gallons for gas and quarts for oil.

At the end of the month, a summary of the daily consumption records must be prepared showing the gas and oil used by each car. All purchases usually being made at the same prices, or at readily determined averages, it follows that the problem of allocating this cost to the respective cars is not a difficult one. It involves only the question of multiplying the quantities consumed by the purchase prices. The general-ledger entry is a debit to gas and oil and a credit to the inventory accounts for the amount of the consumption thus determined. The postings to the cost records (exhibit 2) are made from the monthly summary of the daily consumption reports (exhibit 4, summarized monthly and converted to money value, as explained).

Exhibit 5

MONTHLY LABOR SUMMARY

NAME John Scarborough MONTH January 1928

← Cars Worked On →

Date	F 3	F 4	F 6	F 8	C 4	C 7	C 8	B 2	Indirect
1									
2	165		275	150		90		75	45
3									
4									
5									
6									
7									
8									
9									
10									

Parts, accessories and repairs. This account includes purchases of parts, tires and other accessories, and outside repairs. Purchases made for specific cars should be charged direct to those cars. Purchases made for stock must be charged to an inventory account and transferred to cost as used. The purchase or voucher register is the book of original entry for both general and cost records.

Exhibit 6

DAILY TIME REPORT

NAME: John Scantoro WORKED FROM 8 a.m. TO 5 P.M. DATE: Jan 21 1928 FOR OFFICE USE ONLY

CAR NO.	DESCRIPTION	KIND OF WORK	TIME STARTED	TIME STOPPED	TIME WORKED	C O S T		
						DIRECT	INDIRECT	
3	Ford	Kind Street	8 -	9 40	1 40	1 65		
6	"	Bellevue Street	9 40	11 00	2 10	2 75		
		Lunch	11 00	1 00	Lunch			
8	"	Repair Motor Pump	1 00	2 30	1 30	1 50		
		Sunday Shop Work	2 30	3 30	1 00		45	
7	Chevrolet	Kind Street	3 30	4 15	45	90		
4	Buick	" "	4 15	5 00	45	75		
TOTALS -						8 00	7 55	45

O. K. William Johnson
Manager.

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Labor. The source of the charges to this account is the monthly labor summary (exhibit 5, page 249), which is a summary of the daily time reports (exhibit 6). The monthly labor summary serves as the posting medium to both general ledger and individual car accounts (exhibit 2). The monthly entry in the general books consists of debits to direct labor and indirect labor and a credit for the sum of the two to accrued payroll. The charge to the individual car record (exhibit 2) is made from the monthly labor summary (exhibit 5). Actual disbursements for labor costs are debited to accrued payroll. At the end of the month the remaining credit balance, if any, in accrued payroll will, of course, represent wages accrued but not paid.

Time spent directly on cars by mechanics and others is charged to direct labor. General shop work which can not be allocated to specific cars is charged to indirect labor, and is distributed to the detailed cost records (exhibit 2) on the basis of the ratio of each car's monthly mileage to the total mileage of all cars in service during that month.

Insurance. In the general books, all insurance premiums are charged to prepaid or unexpired insurance, and each month the actual expired premiums on all cars are summarized and credited to this account and charged to insurance. Only insurance which can be put in the category of direct costs should be charged to this account, as, for instance, fire, theft, property-damage and public-liability insurance on automobiles, and workmen's-compensation insurance covering direct and indirect labor. Any other insurance of a general or administrative nature, such as insurance on the lives of officers, workmen's-compensation covering clerical and managerial salaries, fraud or forgery, etc., should be charged to an insurance account under the caption of general expenses.

Equitable distribution of insurance costs to individual cars is largely a matter of judgment. Insurance based on definite values of cars and predetermined rates should be allocated on that basis; workmen's-compensation insurance should be allocated on the basis of the ratio of labor applied to total labor; liability and property-damage insurance, if such premiums are based on gross earnings (as they usually are), should be allocated on the basis of the ratio of each car's earnings to total earnings; and so forth.

Car licences. Expenditures for automobile licences must be charged to prepaid licences, as they are paid in advance. Since

licences are a predetermined yearly cost, it is simply a matter of allocating to each car one-twelfth of the yearly cost at the end of every month. The entry in the general books is a debit to car licences and a credit to prepaid licences.

Miscellaneous direct costs. Any unusual items of direct cost are to be entered in this account. For example, a renter may so damage or wreck a car as to remove its cost of renovation from the category of ordinary repairs. In such cases the charges should be made to miscellaneous-direct-costs account. Allocation to individual cars should be made on the basis of the ratio of each car's monthly mileage to total mileage of all cars in service during that month. It would not be representative of normal conditions to charge the entire loss to the vehicle in question, such losses being in the nature of extraneous occurrences, the extent of which should be borne by all vehicles in service.

General and financial expenses. The entry previously illustrated is made in the general books at the end of every month. The total of general and financial expenses is allocated to the individual cars, as in two previous cases, on the basis of the ratio of each car's mileage to total mileage of all cars in service. Individual car mileage is obtained from the revenue record (exhibit 1) maintained for each car. This means not only the productive, but also the "dead" mileage; in other words, total mileage consumed by each car. Total mileage of all cars is determined by summarizing the mileage shown by the individual records (exhibit 1).

The only account under this caption which may require special comment is stolen cars. When it is definitely ascertained that an automobile has been stolen and is beyond recovery, the carrying value as an automobile should be eliminated from the books. Therefore, the following entries must be made:

Car depreciation	xxx	
Reserve for depreciation		xxx
To provide for depreciation from beginning of month to date of disappearance of automobile.		
Reserve for depreciation	xxx	
Cars		xxx
To apply accrued depreciation up to date of disappearance of automobile against asset account.		
Stolen cars	xxx	
Cars		xxx
To transfer net book value of automobile stolen to account of stolen cars.		

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If there is a probability of recovery from an insurance company, the book value of the stolen car may be carried in suspense until such recovery, but not, however, in the car account.

CONCLUSION

When the plan of general and cost accounts outlined herein is adopted and religiously adhered to, it will be found to give much valuable information to the management that no plan of solely general accounts can possibly furnish. It will permit the establishment of mileage rates on different classes of vehicles with accurate knowledge of the amount it costs per mile to operate them. Leaks, inefficiencies, wastes and unproductive mileage on individual cars will be exposed, making it possible to apply the necessary remedies.

It is true that the plan involves considerable clerical work, but this is so of all methods of cost finding which seek to determine and explain detailed costs. The writer is of the conviction that the additional efforts necessitated by these cost records are well justified when the wealth of useful and valuable information obtained therefrom is placed in contrast.