The Choice of Cost Drivers in Activity-Based Costing: Application at a Chinese Oil Well Cementing Company

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In recent years, activity-based costing (ABC) has become a popular cost and operations management technique to improve the accuracy of product or service costs for firms to stay competitive. Two authors went to Xi'an area to collect a sample data on fuel overhead cost, number of wells, well-depth, distance, weight, and ton-kilometers at a Chinese oil well cementing company. We also verified the data accuracy with the company controller. This study investigates how to choose the appropriate cost driver of fuel overhead costs when adopting ABC . Using the linear regression analysis and the maximum r-square improvement (MAXR) model selection method, the empirical results show that among the five possible cost drivers of the number of wells, the distance from the office to the field, the weight of the cement and additive materials, the depth of well cementing, and the ton-kilometers measured by the product of the distance and the weight, the best cost driver is the product of the distance and the weight. Thus, by applying the ABC system and using the product of the distance and the weight as the cost driver will improve the fuel cost allocation accuracy among individual wells.

I. Introduction

Traditional cost accounting, which mainly uses one single cost driver such as direct labor or output volume to allocate the overhead costs, systematically distorts product costs in modern manufacturing environments in which overhead costs are a significant portion of product costs. Incorrect product cost information can lead to poor decisions. Activity-based costing (ABC) was developed by General Electric and other firms to improve the usefulness of accounting information (Johnson, 1992).

Cooper (1988a) also pointed out that with the increasing diversification of product volume, size, and complexity, the calculated product costs would be deeply distorted under the traditional volume-based costing system. As a result, most of the attention has been directed to the design of ABC, which regards activity as the cause of resource assumption and develops multiple cost drivers through the measurement of activity (Johnson 1992; Cooper and Kaplan 1988a, 1988b; Cooper 1988a, 1988b, 1989a, 1989b, 1990a, 1990b; Kaplan 1988; and Turney 1992).

After ABC had been implemented in practice for many years, case studies were widely prepared to identify the difference between ABC and the traditional costing system. These case studies include those by Artemis and Kaplan (1987), Cooper and Kaplan (1988a, 1988b), Bhimani and Pigott (1992), and Greeson and Kocakulah (1997). Wang et al. (2005) reported the first ABC study in China for a state-owned firm.

Tsai et al. (2009) used the mathematical programming approach to incorporate both price elasticity of demand and capacity expansion features into an ABC product-mix decision model. For an empirical analysis of cost model and cost driver selection, Foster and Gupta (1990) were first to conduct the indirect overhead cost driver analysis for a U.S. firm using regression models. Datar et al. (1993) used the simultaneous equation method to estimate and select cost drivers for a U.S. firm. Banker et al. (1995) conducted an empirical analysis of indirect overhead cost drivers for a U.S. firm by building various regression models. Duh et al. (2009) investigated the design and implementation of an ABC system in a Taiwanese textile company using a series of regression models.

This study is the first to study and select cost driver(s) for a Chinese company using a series of regression models. This company implements the traditional costing system using a simplified single cost driver, oil well depth, to allocate six overhead costs to individual wells. The company's top management was concerned with the current method that distorted the total cost of each individual oil well cementing work. Our study shows that by using the ABC system and the regression analysis method to select the appropriate cost driver, the company can improve the accuracy of its overhead cost allocation to an individual well.

The remainder of this paper is structured as follows. The next section describes the company background, activities, and activity cost pools. It is followed by a theoretical analysis of cost driver options. Then we conduct empirical tests of overhead cost driver options using an oil well cementing firm's data, which includes hypotheses development, research design, data description and a discussion of the main results. The final section presents the conclusions of this study.

II. Company Background, Activities, and Activity Cost Pools

1. Brief Company Description

ABC Oil Well Cementing Company, a cost center affiliated with a Chinese State-owned Oil Conglomerate, specializes in cementing oil wells and gas wells. In petroleum well construction, cementing is the process used to make sure that an oil or a gas well is firmly protected for the later oil or gas exploration work.

The organizational structure of ABC Oil Well Cementing Company is presented in Chart 1. There are six headquarter overhead departments, four well cementing units, and four repair and maintenance stations. Under each cementing unit, there are construction teams, lime storages, and laboratories. Cementing units A, B, and C, with an overall annual drilling footage of more than 1.9 million meters, are in charge of oil well cementing work. Cementing unit D, with an overall annual drilling footage of more than 0.8 million meters, is in charge of both oil and gas well cementing work.

The current costing system is a traditional costing system to account for each of the individual wells. Specifically,

(1) The direct material is mainly composed of the cement and additive materials. The direct material cost is charged to the individual wells directly.

(2) The overhead cost is recorded under the following six cost accounts: fuel cost, traveling cost, labor cost, equipment related cost, motor vehicle related cost, and other overhead cost.

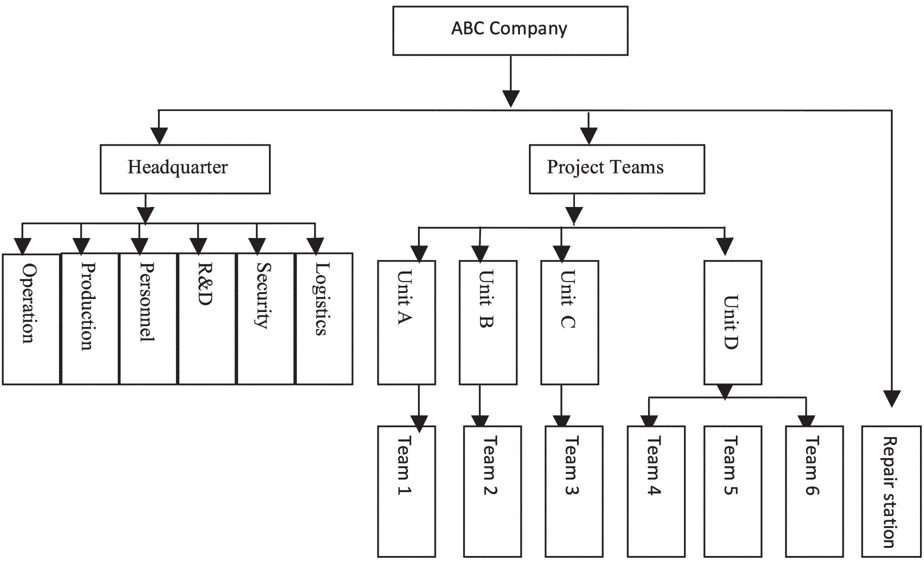
(3) The monthly actual fuel consumption for all cementing units is recorded in the fuel cost account, and is applied to individual wells based on predetermined fuel budget percentages.

(4) The monthly actual traveling cost reimbursement for all individual wells from all cementing units is recorded in the traveling cost account. The traveling cost is allocated to individual wells based on the actual well depth.

(5) The monthly actual labor cost for all cementing units, including the salary, bonus, fringe benefits, and overtime premium, is recorded in the labor cost account. The labor cost is allocated to the individual wells based on the actual well depth.

(6) The monthly actual equipment related overhead cost for all cementing units, including the depreciation expense, rental expense, and repair and maintenance expense, is recorded in the equipment cost account. The equipment cost is allocated to the individual wells based on the actual well depth.

Chart 1 Organizational Structure of ABC Oil Well Cementing Company



(7) The motor vehicle cost for all cementing units, including the insurance, government charged administration fee for highway transportation, vehicle license fee, and the road toll charge, etc., is recorded in the motor vehicle cost account. The vehicle cost is allocated to the individual wells based on the actual well depth.

(8) All other overhead cost is allocated to the individual wells based on the actual well depth.

ABC Oil Well Cementing Company's overhead cost is about 50% of the total cost. Under the current costing system, overhead cost is primarily allocated to the individual wells based on the actual well depth. As a result, the current overhead allocation method is over-simplified. There is not much cause-effect relationship between each of the six overhead account costs and the cost driver of using the actual well depth. That means that under the current costing system, the company's individual well cementing costs are distorted substantially. Therefore, the company's top management decided to improve the accuracy of the current costing system by setting up an ABC team with the consultation of two of our co-authors to conduct an empirical study of the company's major activities, activity cost pools, and to design and implement an ABC system with appropriate cost drivers.

2. Define Activities and Activity Cost Pools

At ABC Oil Well Cementing Company, the ABC team, in consultation with top managers, identifies six activity centers of lime storage, well drillings, transportation, repair and maintenance, laboratory testing, and administrative coordination.

In these six activities, the ABC team finds that the transportation activity overhead cost is the most important cost for company management to control. The transportation activity includes packing, loading, and transporting the direct materials and the equipment needed for well drillings from the company office to the oil well field. Cement trucks, tank trucks, water-tank lorries, and pressure cars are needed for the transportation activity. Cement trucks are viewed by the ABC Company as transportation equipment, while tank trucks, water-tank lorries, and pressure cars are viewed as transportation and cementing equipment.

The resource consumption or overhead cost for the transportation activity includes labor cost, equipment related cost, facility related cost such as parking or renting fees, and other motor vehicle cost. Considering that driving the tank trucks, water-tank lorries, and pressure cars from the company office to the oil field are needed both for the transportation purpose and the well drilling purpose, it is difficult to decide on the proportion of labor cost and equipment cost that should be assigned to the "transportation" activity pool and the "well drillings" activity pool.

Fuel cost is also incurred both for the purpose of transportation and for the purpose of well drillings. Again, it is difficult to decide which part of the fuel expense should be assigned to the activity pool of "transportation" and which part of the fuel cost should be assigned to the activity pool of "well drillings". According to the historical data pattern revealed from the field interview, the fuel cost incurred for the purpose of well drillings account for <30% of the total fuel cost. The ABC team decides to assign all the fuel cost to the activity pool "transportation" and to assign related labor and equipment costs to the activity pool of "well drillings."

Fuel cost accounts for 8-12% of the total overhead cost, thus the application of fuel cost will significantly influence the cost of the individual wells. Therefore, the selection of an appropriate cost driver of fuel cost is critical for an accurate cost assignment.

III. Theoretical Analysis of Cost Driver Options

For the transportation activity fuel overhead cost, there are five possible cost drivers that cause the fuel cost to incur or increase. These cost drivers include the number of wells, the distance from the office to the field, the weight of the cement and additive materials, the depth of well cementing, and the ton-kilometers measured as the product of the distance and the weight.

In general, the more cementing work on more oil wells, the larger the fuel overhead cost would incur. Therefore, the number of wells is a possible cost driver. The second possible cost driver is the distance between the office and the oil well field because the farther the distance, the larger the fuel overhead cost may incur. The third possible cost driver is the weight of the cement and additive materials; the heavier the cement and additive materials, the larger the fuel overhead cost would incur. The fourth possible cost driver is the well depth; the more well depth, the more cement and additive materials are need, which would incur more fuel cost. The fifth possible cost driver is ton-kilometers as measured by the product of the distance and the weight of the cement and additive materials.

Each cost driver has its advantages and disadvantages. The ABC team chooses the most appropriate cost driver based on the decision relevance principle as shown in the following reasoning discussions.

Using the number of wells as a fuel overhead cost driver ignores the influence on fuel consumption from the distance from the office to the field, the weight of the cement and additive materials, the depth of well cementing, and the combined effect of distance and the weight. Using the number of wells as the cost driver may lead to inappropriate overhead cost allocations to different individual wells. Specifically, this cost allocation method penalizes short-distance, low-weight, and shallow wells. Individual wells that are relatively far from the office, that use large amounts of the cement and additive materials, and that are relatively deeper benefit since the fuel cost is allocated and pushed on to short-distance, low-weight, and shallow wells.

Using the distance from the office to the field as a cost driver ignores the influence on fuel consumption from the weight of the cement and additive materials, the depth of well cementing, and the combined effect of weight and depth. Using the distance from the office to the field may as well lead to inappropriate overhead cost transfer among individual wells. Specifically, this penalizes low-weight, shallow wells. Individual wells that are relatively deeper and that use large amounts of cement and additive materials benefit since the fuel cost is pushed on to low-weight, shallow wells.

Using the weight of the cement and additive materials or the depth of wells as a cost driver ignores the influence on fuel consumption of the distance from the office to the field. Using the weight of the cement and additive materials (or the depth of wells) may as well lead to inappropriate overhead cost allocations to individual wells. Specifically, this penalizes short-distance wells. On the other hand, individual wells that are relatively far from the office benefit since the cost of fuel is pushed on to the short-distance wells.

Using the product of the distance and the cement and additive materials weight considers the combined effect of the distance from the office to the field and the weight of the cement and additive materials. It may not be a perfect measure but it would be more accurate than other available cost driver measures.

IV. Empirical Test of Cost Driver Options

As mentioned above, fuel cost accounts for 8-12% of the total overhead cost, thus the application of fuel cost will significantly influence the cost of individual wells. To choose an appropriate cost driver of fuel cost is critical for accurately assigning cost. Theoretical analysis provides the company with a big picture of which cost drivers are optional without subjecting those cost drivers to rigorous empirical tests. In this section, a statistical regression analysis is presented to decide which cost driver has the strongest correlation with fuel cost. First, the ABC team regresses the fuel cost separately on the number of wells, the depth of wells, the weight of the cement and additive materials, and the ton-kilometers measured as the product of the distance and the weight. A significant coefficient in the simple regression analysis implies that the independent variable (i.e., an optional cost driver) is significantly related to the dependent variable fuel cost . Second, the ABC team sets a horse race among those independent variables. Using the multiple regression method, the ABC team tries to find the most appropriate cost driver that has the strongest correlation with fuel cost.

1. Hypotheses Development

In general, during a specific period, as the number of wells increase, the fuel cost increases accordingly. Therefore, our first hypothesis is (in alternative form):

Hypothesis 1 (H1): The fuel cost is positively correlated with the number of wells. As the number of wells increase, the fuel cost increases.

When the number and the loadings of transportation vehicles are held constant, the fuel cost is positively correlated with the distance from the office to the field. Therefore, our second hypothesis is (in alternative form):

Hypothesis 2 (H2): The fuel cost is positively correlated with the distance from the office to the oil field. As the distance from the office to the field increases, the fuel cost increases.

When the weight of the cement and additive materials is heavier, the number of cement trucks, tank trucks, water-tank lorries, and pressure cars increases. Thus, when the distance from the office to the oil field is held constant, the heavier the loadings of the cement and additive materials, the more vehicles are needed and the more costly the fuel cost becomes. Therefore, our third hypothesis is (in alternative form):

Hypothesis 3 (H3): The fuel cost is positively correlated with the weight of the cement and additive materials. As the weight of the cement and additive materials increases, the fuel cost increases.

The depth of wells directly influences the consumption of the cement and additive materials. When the circumference of the wells and the structure of the earth's crust in a specific area is the same, there is a linear correlation between the depth of the wells and the consumption of the cement and additive materials. In other words, the loadings of the cement and additive materials needed would influence the number of vehicles needed, which would further influence the consumption of fuel. As the weight of the cement and additive materials is a more direct measure than the depth of wells when deciding the consumption of fuel, we have our fourth hypotheses:

Hypothesis 4a (H4a): The depth of the wells is significantly correlated with the weight of the cement and additive materials. As the depth of the wells increases, the weight of the cement and additive materials increases.

Hypothesis 4b (H4b): The depth of the wells is significantly correlated with fuel cost. As the depth of the wells increases, the fuel cost increases.

Hypothesis 4c (H4c): The weight of the cement and additive materials is a more relevant measure in deciding the fuel cost than the depth of the wells.

Using the product of the distance and the weight of the cement and additive materials considers the combined effect of the distance from the office to the oil field and the weight of the cement and additive materials. It overcomes the simple cost driver measure constraint and captures a better picture of the fuel cost than other cost driver measures. Thus, we have the following hypotheses:

Hypothesis 5a (H5a): The ton-kilometers, measured by the product of the distance and the weight, are significantly correlated with the fuel cost. As the product of the distance and the weight increases, the fuel cost increases.

Hypothesis 5b (H5b): Among all five optional cost drivers including the number of wells, the distance from the office to the oil field, the depth of the wells, the weight of the cement and additive materials, and the ton-kilometers (i.e., the product of the distance and the weight), the last cost driver is the most relevant measure in deciding the fuel cost.

2. Data Description

This is a cross-sectional study using data collected from the internal cost report of the ABC Oil Well Cementing Company in the fiscal year 2005. We use department-level cost data instead of the corporate-level data to maximize data points. Due to seasonal concerns, the company does not operate in January or February. If we used corporate-level data, the sample would only include 10 data points. To meet the conventional minimum of 30 data point criterion, we decide to use department-level cost data with 40 data points. The full data is shown in Table 1.

Table 1. ABC Oil Well Cementing Company's Fuel Costs and Cost Drivers

Number of Wells	Distance	Weight	Depth	Ton-kilometers	Fuel Cost	Department
18	1574	1077.81	31819	94713.32	14377.61	A
34	2898	2064.33	58549	178028.36	78588.65	A
31	2457	1912.04	55212	153560.65	51896.76	A
26	1919	1647.77	47346	123646.46	89272.27	A
28	1982	2100.24	53604	145324.93	67653.21	A
41	2836	2613.46	73897	182577.50	71753.93	A
37	2606	2459.61	69044	174594.12	89937.61	A
38	3240	2453.36	70923	217347.96	97172.99	A
42	3900	2990.32	81379	287354.73	188111.21	A
19	2159	1293.18	38487	145787.11	150856.73	A
18	1113	865.15	27428	53958.51	14395.15	B
33	2051	1438.71	48684	89653.23	63095.37	B
29	2547	1357.79	43217	117759.36	49633.18	B
31	2638	1454.24	43917	122423.57	58574.52	B
23	1842	1360.18	36279	110196.43	45873.70	B
27	2340	1513.05	42293	131797.10	62895.51	B
31	1910	1738.52	48247	107293.84	66954.66	B
35	2018	2020.64	53542	118724.32	68907.44	B
34	2315	1976.24	53053	137418.42	81289.86	B
17	1287	1174.12	27383	90455.32	73393.45	B
20	2725	1387.28	40648	191753.25	8936.72	C
35	4700	2481.05	74962	333434.40	58527.76	C
35	4690	2436.72	74457	326856.10	67295.91	C
33	4260	2355.66	65377	306573.05	58956.28	C
37	4880	2586.39	74398	341338.00	83804.20	C
43	5735	2923.50	88501	389498.55	78713.94	C
41	5815	2826.84	82697	400815.95	85819.44	C
34	4430	2318.32	67495	300919.55	98307.96	C
33	3960	2353.19	68219	278510.30	124482.89	C
19	2260	1577.92	38004	184796.75	190102.96	C
3	485	192.45	7049	31118.28	22966.34	D
15	2570	1983.85	42228	339252.50	181467.66	D
21	3035	2665.21	65197	372238.74	94500.93	D
24	3000	3043.34	73771	371277.73	268993.33	D
22	2745	3655.83	71526	453465.48	55811.56	D
27	3760	4603.87	85405	616431.51	179774.01	D
28	3755	4829.64	92269	647494.30	305584.74	D
27	4405	4334.59	83872	692814.85	161397.91	D
26	3380	4402.37	83409	557020.58	408718.24	D
28	4625	4340.12	89135	709684.69	511466.83	D

3. Research Design

Foster and Gupta (1990), Datar et al. (1993), Banker et al. (1995), and Duh et al. (2009) built both simple and multiple regression models and used firm data to empirically test their models to select the best cost drivers. Our study followed their approach to build a series of regression models.

(1) Simple Regression Analyses

We used the following simple regression models to examine the correlation between cost drivers and fuel cost.

FUEL = a + b1 x NUM_WELLS

FUEL = a + b2 x DEPTH_WELLS

FUEL = a + b3 x DISTANCE

FUEL = a + b4 x WEIGHT

FUEL = a + b5 x TON_KILOMETERS

The definitions of the variables in the above models are as follows:

FUEL -- fuel cost.

NUM_WELLS – number of wells.

DEPTH_WELLS -- depth of well cementing.

DISTANCE -- distance from the office to the field.

WEIGHT – weight of the cement and additive materials.

TON_KILOMETERS – ton-kilometers as measured by the product of distance and weight

(2) Multiple Regression Analysis

We also use the following regression model to identify the cost driver that has the strongest correlation with the fuel cost.

FUEL = p + q1 x NUM_WELLS + q2 x DEPTH_WELLS + q3 x DISTANCE
+ q4 x DISTANCE + q5 x TON_KILOMETERS

4. Regression Analysis Results

(1) Simple Regression Analysis Results

We conduct a series of simple regression analyses, and present the results in Table 2.

Table 2, column 2 shows that contrary to our prediction, the coefficient on the number of wells is not significant. The data does not show any significant positive correlation between the number of wells and fuel cost. Therefore, H1 is not supported.

Table 2, column 3 shows that the coefficient on the distance from the office to the oil field is marginally significant with an adjusted R^2 of 0.101 and a p-value of 0.045. It also shows that the distance from the office to the oil field is positively correlated with fuel cost. As a result, H2 is marginally supported.

Table 2, column 4 shows that the coefficient on the weight of the cement and additive materials is significantly positive with a p-value of 0.000. It also shows that the weight of the cement and additive materials is positively correlated with fuel cost. Thus, H3 is supported.

Table 2, column 5 shows that the coefficient of the weight of the cement and additive materials on the depth of the wells is significantly positive with a p-value of 0.000, which implies that there is a strong positive correlation between the weight of the cement and additive materials and the depth of the wells. Therefore, H4a is supported.

Table 2, column 6 shows that the coefficient of the depth of the wells on fuel cost is significantly positive with a p-value of 0.001, which implies that the weight of the cement and additive materials is significantly positive with fuel cost. As a result, H4b is supported.

Table 2, column 7 shows that the coefficient of the product of the weight and the distance on fuel cost is significantly positive with a p-value of 0.000, which implies that the ton-kilometers (i.e., the product of the weight and the distance) is significantly positive with fuel cost. Thus, H5a is supported.

Table 2. Coefficients on Cost Drivers in Alternative Fuel Cost Models for the ABC Company

	H1 Fuel	H2 Fuel	H3 Fuel	H4a Weight	H4b Fuel	**H5a Fuel**	H5b Fuel
Intercept	116,775 (0.0536)	33,406 (0.4373)	-41,421 (0.1581)	-499.381 (0.0352)	-43,650 (0.3264)	**5,608.162 (0.7898)**	56,126.02 (0.4639)
No	-123.127 (0.9504)						3,009.795 (0.5689)
Distance		26.430 (0.0452)					-28.987 (0.027)
Weight			66.665 (<0.0001)				-84.404 (0.4547)
Depth				0.048 (<0.0001)	2.645 (0.0005)		2.791 (0.5135)
Ton-kilometers						**0.4052 (<0.0001)**	0.545 (0.000)
R Square	0.0001	0.1014	0.4792	0.8170	0.2728	**0.5041**	0.583
Adj. R Square	-0.0262	0.0778	0.4655	0.8121	0.2537	**0.4911**	0.522
	H1 not Supported	H2 Supported	H3 Supported	H4a Supported	H4b Supported	**H4c Supported Best Model**	H5b Multiple Regression Model Supported

(2) Multiple Regression Analysis Result

We also conduct a multiple regression analysis using all five potential cost drivers as independent variables. The last column in Table 2 shows that among all five cost drivers, the one that wins out is the ton-kilometers (i.e., the product of the distance and the weight), which captures the combined effect of the weight of the loadings of the cement and additive materials and the distance from the office to the oil field. Therefore, H5b is supported.

(3) Maximum R-Square Improvement (MASR) Method

From Table 3, we can compare the relevance of the weight of the cement and additive materials and the relevance of the depth of the wells using the MASR method. For example, Model 2 R-Square is higher than that of Model 3; Model 7 R-Square is higher than that of Model 13; Model 21 R-Square is higher than that of Model 24; and Model 27 R-Square is higher than that of Model 28. The significantly different R-Square implies that the weight of the cement and additive materials is a better-cost driver of fuel cost than the depth of the individual wells. Thus, H4c is supported.

V. Conclusions

In recent years, activity-based costing (ABC) has become a popular cost and operations management technique to improve the accuracy of product or service costs for firms to stay competitive. Based on field research conducted in a Chinese oil well cementing company, this study investigates how to choose the appropriate cost driver of fuel cost when adopting the ABC system. This study conducted both a theoretical analysis of deciding which cost driver is better, and a rigorous empirical test of this cost driver choice. Using the linear regression analysis and the MAXR model selection method for five possible cost drivers, the ABC team decides to select the new cost driver called ton-kilometers, which is the product of the weight of the cement and additive materials cost driver and the distance from the office to the oil field cost driver. This cost driver measure captures the combined effect of the cement and additive materials and the driving distance in the regression analysis.

The empirical results show that among the five possible cost drivers including the number of wells, the distance from the office to the oil field, the weight of the cement and additive materials, the depth of well cementing, and the ton-kilometers measured by the product of the distance and the weight, the best cost driver is the product of the distance and the weight. Thus, the results from this study show that applying the ABC system and using the product of the distance and the weight as the cost driver will improve the fuel cost allocation accuracy among individual wells.

In conclusion, this paper contributes to the literature by being the first to use Chinese company's data in a rigorous empirical test setting to determine the best choice of cost drivers. By showing that one cost driver is more strongly related to fuel cost than the other possible cost drivers, the use of this specific cost driver would lead to more accurate product costs to allocate overhead costs to different cost objects.

Table 3 Using the Maximum R-Square Improvement (MAXR) Method to Select the Best Cost Driver Model for the Fuel Cost

Regression Model	No. of Variables in Model	R-Square	Variables in Model
1	1	0.5041	Ton-kilometers
2	1	0.4792	Weight
3	1	0.2728	Depth
4	1	0.1014	Distance
5	1	0.0001	Number
6	2	0.5664	Distance & Ton-kilometers
7	2	0.5516	Number & Weight
8	2	0.5376	Depth & Weight
9	2	0.5196	Number & Ton-kilometers
10	2	0.5128	Depth & Ton-kilometers
11	2	0.5099	Product & Weight
12	2	0.5096	Distance & Weight
13	2	0.5079	Number & Depth
14	2	0.3243	Depth & Distance
15	2	0.1808	Number & Distance
16	3	0.5760	Number, Distance & Ton-kilometers
17	3	0.5755	Depth, Distance & Ton-kilometers
18	3	0.5715	Distance, Ton-kilometers & Weight
19	3	0.5533	Number, Ton-kilometers & Weight
20	3	0.5524	Depth, Ton-kilometers & Weight
21	3	0.5520	Number, Distance & Weight
22	3	0.5516	Number, Depth & Weight
23	3	0.5382	Depth, Distance & Weight
24	3	0.5256	Number, Depth & Distance
25	3	0.5244	Number, Depth & Ton-kilometers
26	4	0.5792	Depth, Distance, Ton-kilometers & Weight
27	4	0.5779	Number, Distance, Ton-kilometers & Weight
28	4	0.5763	Number, Depth, Distance & Ton-kilometers
29	4	0.5548	Number, Depth, Ton-kilometers & Weight
30	4	0.5521	Number, Depth, Distance & Weight
31	5	0.5833	Number, Depth, Distance, Ton-kilometers & Weight

Footnote

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