

# Innovation in Trucking: Advanced Truckload Firms

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Advanced truckload firms are achieving remarkable efficiency gains. These gains threaten to capture important blocks of railroad traffic. The advanced truckload firms are obtaining these results by applying new business strategies, such as the following, to truckload trucking: (a) carefully selecting markets and tailoring service to satisfy these markets, (b) increasing growth to enhance efficiency in the target markets, (c) emphasizing the close integration of operations and marketing, and (d) increasing the use of nonunion company drivers to ensure operational flexibility. The application of these business methods is resulting in the kind of success and growth that indicates rapid future transformation of the truckload sector. One measure of this success is the sharp cutting of almost every category of truck costs. The advanced truckload firms have used their cost advantages so far to expand rapidly, but their ability to continue to grow is finite. Still, large growth potential remains. In the immediate future, continuing growth by these firms will result in improved truckload sector productivity and a change in the sector's composition.

Advanced truckload firms (ATLFs) such as J.B. Hunt, P.A.M. Transportation, MNX, M.S. Carriers, Builders' Transport, Werner Enterprises, and BN Transport are using a variety of new business methods (described in the following paragraphs) to enhance efficiency. Their success is encouraging the growth of existing ATLFs and their imitation by other firms.

As a consequence, truckload (TL) sector productivity is growing rapidly. Three to four years ago typical TL costs equaled \$1.20 to \$1.30 per loaded mile. In mid-1986, the typical TL carrier long-run marginal costs were \$1.03 per loaded mile as shown in Table 1. [These costs were evaluated using an ongoing survey, the National Motor Transport Data Base (NMTDB) as well as various trade publications and industry sources.] By mid-1986, the typical ATLF had long-run marginal costs of \$0.90 per loaded mile, a 12.4 percent reduction (see Table 2). These cost reductions are independent of any future increases in truck size and weight limits.

As TL rates fall, rail rates must decline to remain competitive and some rail traffic will be diverted to truck. When fully reflected in railroad rates and traffic, a 12.4 percent TL cost reduction will result in a short-run traffic loss of 14 to 16 billion ton-miles. The long-run traffic losses may exceed this first impact, with the eventual total traffic loss representing 36 to 40 billion ton-miles, or 4.5 to 5.0 percent of total railroad traffic. The Association of American Railroads' (AAR) Intermodal Competition Model (ICM) was used to predict the impact of TL industry-wide ATLF costs on the railroad industry. The

ICM is described in the report "AAR Intermodal Competition Model," which is available from the AAR.

## NEW APPROACHES TO TRUCKLOAD TRUCKING BY ATLFs

As used here, the term ATLF denotes more than a small group of unusually successful TL carriers. The concept also refers to the way these firms do business. Indeed, although important variations exist among the most productive TL firms, there is an overlapping nexus of business methods. Understanding these business methods is important for predicting the future evolution of truckload trucking.

### Selecting Markets and Providing Services

Though legally common carriers, ATLFs are selective in choosing their markets. At the moment, ATLF growth targets center on

- TL freight previously handled by less efficient private or contract carriers;
- Less than truckload (LTL) freight that can be consolidated at regional centers into TL lots or added to already partially filled trailers; and
- TL freight previously handled by rail.

Among these targets, freight carried by private and contract TL carriers and LTL carriers have so far ranked higher than that carried by railroads. To win this service-sensitive truck business, ATLFs have had to provide premium quality service. Over time, ATLFs' service quality combined with their low rates may become more tempting to increasingly service-sensitive rail shippers.

ATLFs employ a number of approaches to providing service quality responsive to shipper needs:

1. Dispatching: conducted 24 hours a day, 7 days a week;
2. Building traffic density in key corridors to ensure equipment availability;
3. Providing extra trailers (two trailers for each tractor instead of one), making loading and unloading more convenient for shippers and avoiding delays associated with waiting for trailers;
4. Making multiple pickups and deliveries to improve overall shipper logistics as well as reducing per ton-mile costs;
5. Owning equipment rather than relying on independent contractors, allowing shorter equipment cycles; employing preventive maintenance to ensure that vehicles are clean and reliable; and

TABLE 1 TYPICAL 1986 RAIL-COMPETITIVE TRUCK COSTS (based on a single 48-ft trailer)

	Total Mile (cents)	Loaded Mile (cents)	Ton-Mile (cents)	Percent
Labor <sup>a</sup>	32.62	36.21	1.91	35.3
Equipment <sup>b</sup>	31.67	35.15	1.85	34.3
Fuel	15.51	17.22	0.91	16.8
Overhead <sup>c</sup>	4.51	5.01	0.26	4.9
Other costs <sup>d</sup>	8.05	8.94	0.47	8.7
Total	92.36	102.53	5.40	100.0

<sup>a</sup>Includes driver wages, paid time off, and fringe benefits.

<sup>b</sup>Includes original purchase price; depreciation; and amortization, vehicle parts, and tires.

<sup>c</sup>A markup, includes salaries, paid time off, and fringes for all employees other than drivers; general supplies and expenses; communications and utilities; expenses for all nontransportation equipment and buildings; and miscellaneous expenses.

<sup>d</sup>Includes federal and state user charges and insurance.

SOURCE: NMTDB, various trade publications, industry sources, and AAR Intermodal Competition Model.

6. Supplying big trailers, permitting faster loading and unloading as well as greater carrying capacity.

The cumulative result is premium service quality, creating a major ATLF competitive advantage.

Selectivity is the key to providing this premium service quality cheaply enough to make it price competitive. The ATLFs actively solicit freight only where and when it contributes to building dense, balanced flows of freight and equipment. Balance is important in time as well as in direction. Marketing seeks to overcome both short-term and seasonal irregularities in demand levels. This selective marketing has produced high loaded ratios and largely eliminated seasonal imbalances. The flexible pricing that is central to these successes is conducted independently of rate bureaus.

#### Increasing Growth to Enhance Efficiency in ATLFs' Target Markets

In generating dense, balanced freight flows, selective marketing facilitates high equipment availability at low cost. Increasing demand in a traffic lane makes traffic volume more predictable because chance fluctuations are more likely to cancel one another out. With more predictable demand, a smaller percentage of truck capacity is needed as standby to ensure that trucks will be available to meet demand. A larger percentage of truck capacity is, therefore, actually producing revenue at any given time.

Carriers also seek to improve truck use by linking their high traffic density lanes into an efficient route structure. New markets are evaluated according to their potential contribution to efficient equipment utilization. Expansion proceeds by adding new lanes connected with existing markets.

This additional size provides yet further economies. Opening new regional terminals expands access to the limited pool of long-haul drivers. New terminals also produce other advantages:

- Faster response to dispatch,
- Reduced empty or unprofitable mileage required to bring home the long-haul driver,
- More efficient maintenance, and
- Greater efficiency in bulk fuel purchases and refueling.

For all these reasons a more extensive network is more efficient, all other things being equal.

Increased firm size also confers some advantages. Noticeable size combined with ATLF patterns of rapid equipment turnover translates into substantial market power in equipment purchases. The result is often 25 to 35 percent price discounts on new equipment.

#### Integrating Marketing and Operations

Despite the advantage of firm size, the distribution of growth remains more important. Establishing the right distribution of growth requires close integration of marketing and operations.

TABLE 2 THE COSTS OF AN ADVANCED TRUCKLOAD FIRM (based on a single 48-ft trailer)

	Total Mile (cents)	Loaded Mile (cents)	Ton-Mile (cents)	Percent
Labor <sup>a</sup>	28.16	29.85	1.57	33.2
Equipment <sup>b</sup>	26.43	28.02	1.47	31.2
Fuel	14.79	15.68	0.83	17.5
Overhead <sup>c</sup>	7.86	8.33	0.44	9.3
Other costs <sup>d</sup>	7.46	7.91	0.42	8.8
Total	84.70	89.79	4.73	100.0

<sup>a</sup>Includes driver wages, paid time off, and fringe benefits.

<sup>b</sup>Includes original purchase price; depreciation; and amortization, vehicle parts, and tires.

<sup>c</sup>A markup, includes salaries, paid time off, and fringes for all employees other than drivers; general supplies and expenses; communications and utilities; expenses for all nontransportation equipment and buildings; and miscellaneous expenses.

<sup>d</sup>Includes federal and state user charges and insurance.

SOURCE: NMTDB, various trade publications, industry sources, and AAR Intermodal Competition Model.

ATLFs use a variety of organizational forms to achieve this integration. Some firms integrate these functions quite far down in management hierarchy, creating profit centers with considerable autonomy in day-to-day decisions. Others integrate marketing and operations at higher organizational levels. In any case, ATLFs typically structure individual rewards to stress consistency of operational and marketing activities.

Success requires close coordination on a daily basis of five functions:

1. Soliciting business from a specific set of customer accounts,
2. Troubleshooting customer complaints from those accounts,
3. Matching loads with truck capacity,
4. Scheduling pickup and delivery, and
5. Supervising blocks of 40 to 60 drivers and tractors.

Management creates a framework to guide the integration of these activities. A detailed marketing plan establishes priorities for load solicitation. This plan, which may be revised quarterly, is itself the joint product of marketing and operational considerations. Network models assist coordination of loads and trucks and may assist in scorekeeping.

**Using Nonunion Company Drivers To Ensure Operational Flexibility**

The fine-tuned integration of marketing and operations would be valueless without the control to implement it. Use of non-union company drivers ensures this control without the elaborate negotiations entailed by reliance on owner-operators. It also offers some other major advantages:

1. Nonunion company drivers, unlike owner-operators, do not need the capital to buy their own tractors, therefore the pool of available drivers is larger than it would be with owner-operators;
2. Nonunion company drivers are operationally more flexible; thus slipseating, team driving, and relay operations can be used to improve tractor utilization;
3. Nonunion company drivers require only moderate compensation levels: 25 to 29 cents per mile in total compensation compared with about 40 cents in compensation required for a teamster; and
4. Nonunion company drivers are fuel efficient; standardized fuel equipment, driver training, and wage incentives help to control fuel costs.

**ATLF BUSINESS METHODS: CURRENT AND FUTURE TRENDS**

**ATLF Business Methods Are Cutting Truck Costs**

ATLF business methods are producing cost reductions in several cost categories simultaneously (see Tables 1 and 2).

Equipment accounts for the most important cost savings between the ATLF and the typical TL firm. In this category, costs fall from 35.2 cents to 28.0 cents per loaded mile, a drop of about 20 percent. Equipment cost falls because of the higher annual mileage (140,000), volume discounts, and improved

empty/loaded ratios. For the typical ATLF, equipment now represents 31.2 percent of total costs.

Labor costs for the ATLF carrier drop from 36.2 cents to 29.9 cents per loaded mile, a 17 percent reduction. Almost one third (31 percent) of this cost reduction comes from productivity gains attributable to improved empty/loaded ratios. The rest is because ATLFs are paying their labor less per mile. Labor, in total, represents 33.2 percent of total cost for the ATLF.

Fuel costs for the ATLF are lower, 15.7 cents compared to 17.2 cents for the typical TL firm per loaded mile, a 9 percent reduction. This reduction reflects volume fuel purchases by ATLFs and increased fueling at terminals. Fuel is the third largest component of ATLF costs and makes up 17.5 percent of total cost.

Overhead expenses are the exception to this downward cost trend. These expenses increase from 5.0 cents to 8.3 cents per loaded mile. Marketing and operational efforts necessary to reduce empty/loaded ratios from 0.11 to 0.05 contribute to these higher costs and more than justify them.

**Despite Rapid Growth, Future ATLF Expansion May Be Limited**

ATLFs have so far used their cost advantages to expand rapidly, as can be seen in the following table showing the selected ATLF percentage growth in total assets and operating revenue (1983, 1984, and 1985). These ATLF firms include J. B. Hunt, MNX, M. S. Carriers, P. A. M. Transportation, and Werner.

	Percent Growth	
	1983-1984	1984-1985
Total assets	83.1	42.7
Operating revenue	54.1	37.6

It is not clear, however, that they can grow indefinitely. ATLFs may, for example, exhaust the potential for some kinds of cost savings. Certainly energy costs are unlikely to fall much below current levels. Equipment prices are unlikely to decline by much unless the Japanese enter the heavy tractor market. Current ATLF firm sizes probably generate about as much leverage on new equipment prices as can be generated.

ATLF strategies may in some ways be self-limiting. ATLFs achieve high tractor productivity and have substituted 3- and even 2-yr equipment cycles for the more conventional 5-yr cycle. These strategies contribute to the present tractor glut.

The tractor glut is in turn lowering ATLF equipment resale values. Consequently, somewhat longer equipment cycles may return to fashion. (Elimination of the investment tax credit may reinforce this trend.) Indeed, low used tractor prices may even confer an economic boom on owner-operators and the non-ATLF carriers they drive for, though most used tractors probably shift to various short-haul markets.

ATLFs may also encounter diseconomies of scale at some point. Even the largest ATLF, J. B. Hunt, now only earns slightly more than \$100 million in annual gross revenue. Very rapid growth from such a small base can readily produce "growth accidents," in which size outruns the capabilities of the management system in place. Size may also over longer periods erode the entrepreneurial spirit of the current ATLF managements.

ATLFs may also be somewhat more vulnerable to business cycle downturns because they use company-owned equipment rather than owner-operators. Relying on owner-operator contractors' equipment shifted much of the risk of cyclical downturns to the owner-operator contractors. The contractors might go bankrupt, but the carrier would not have its own equipment as demand fell. The ATLF, by acquiring its own equipment, is exposed to greater risk.

### Large Growth Potential Still Remains

ATLF concentration of service quality positions these firms for future growth because it is consistent with the increasing emphasis on logistic cost management. Intensified foreign and domestic competition have supplemented high real interest rates as a stimulus to improving inventory cost control. Table 3 illustrates the continuation of high real interest rates that are part of the force behind the drive to lower inventory costs.

TABLE 3 CHANGES IN REAL INTEREST RATES

Year	Prime Rate	Inflation Rate	Real Interest Rate
1960-1964	4.6	1.0	3.6
1965-1969	6.0	2.9	3.1
1970-1974	7.5	4.7	2.8
1975-1979	8.7	6.6	2.1
1980-1984	14.4	6.6	7.8
1985	9.9	3.6	6.3

SOURCE: *Economic Report of the President*, 1986, Tables B-4, B-68.

In addition to service quality advantages, ATLFs may enhance service and lower costs through further improvements in the more efficient rotation of drivers and equipment. Some experts predict future ATLF fleet averages will be as high as 170,000 mi/yr. Such improvements would produce a whole new phase of cost decreases.

ATLFs also enjoy financial postures, positioning them to exploit growth opportunities rapidly or to weather difficulties. ATLF growth has been largely equity financed. Indeed, profits have been high enough to make equity financing relatively easy. The growing equity base of these firms has, in turn, facilitated debt financing.

### Effects of Growth on Truckload Sector

At current average TL revenue levels, ATLFs are earning quasi-rents or temporary supra-normal profits. Such profits are predictable when average sector revenues are around \$1.05 per loaded truck mile. ATLF costs are \$0.90 per loaded truck mile. Obviously, the result is supra-normal profits—profits that are fueling rapid ATLF expansion and inducing other carriers to imitate or even seek to improve on ATLF methods.

Expansion of more efficient carriers either transforms or drives out the less efficient firms. Existing ATLFs are growing and their numbers are increasing. Some current TL sector trends suggest the result of this growth.

Most important, TL sector productivity has been tracking the upward course pioneered by ATLFs. According to the National Motor Transport Data Base (NMTDB), average annual tractor mileage has climbed from 109,214 miles in 1980 to 120,159 miles in 1985. The empty-to-loaded ratio has fallen from 0.14 in 1980 to 0.11 in 1985.

These productivity gains are correlated with changes in the TL sector's composition. Irregular route common carriers are gaining market share at the expense of private fleets. The NMTDB shows that between 1980 and 1985, irregular route common carriers have gone from 64.4 percent to 88.3 percent of truckload long-haul for-hire trucking. During this period, long-haul traffic made up of those private carriers that are also engaged in for-hire business has declined from 10.3 percent to 5.2 percent.

### CONCLUSION

ATLFs are using selective marketing, growth-oriented policies, nonunion company drivers, and entrepreneurial management styles to provide cost reductions in several cost categories simultaneously. The truckload sector is changing to increasingly reflect ATLF characteristics. The timing of this process is important, but some aspects of it are difficult to predict. Certainly, most dense, long-haul general commodity TL markets will be heavily influenced by ATLFs during the next 5 years.

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