

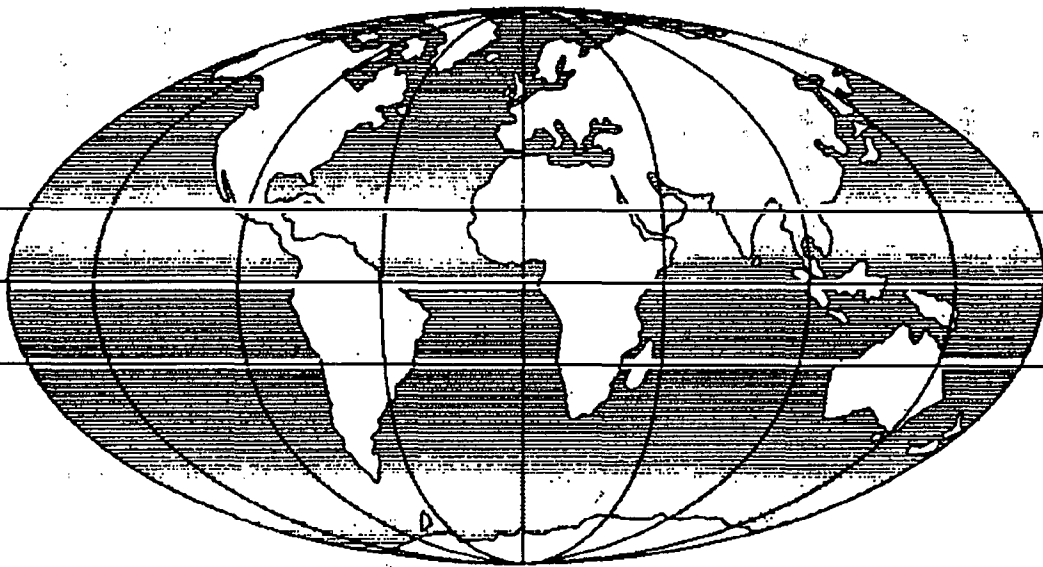


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Halving Africa's Freight Transport Costs: Could It Be Done?

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HALVING AFRICA'S FREIGHT TRANSPORT COSTS: COULD IT BE DONE?

ABSTRACT

Recent research has revealed that long distance freight transport in three African CFA Franc zone countries (Cameroon, Côte D'Ivoire and Mali) is around five times more expensive than in Pakistan. A wide range of factors appear to account for this difference.

Pakistan gains from a very competitive working environment. Low cost simple trucks are used which are strengthened to take heavier loads. A sleeping compartment is added so that high levels of utilisation can be achieved through working day and night with two drivers per truck. The drivers are responsible for all aspects of vehicle running. They are able to achieve very low maintenance costs by driving very slowly and by continuously checking and maintaining their trucks. Major repairs are carried out by small roadside workshops and spare parts are cheap and widely available.

In contrast, in Africa an uncompetitive environment allows high costs to occur through the use of expensive and sophisticated vehicles which achieve a low utilisation. Vehicle maintenance costs are high because parts are very expensive, driving speeds are high and drivers have little responsibility for looking after their vehicles.

Transport cost levels in Africa could be substantially reduced through encouraging more competition, adopting cheaper vehicles, raising mechanical skill levels and giving drivers more responsibility.

Introduction

Recent research has revealed that long distance road freight transport in three African CFA Franc zone countries (Cameroon, Côte D'Ivoire and Mali) is about five times as expensive as in Pakistan [1,2,3]. This paper seeks an explanation for the main causes for these cost differences and suggests possible ways for reducing transport costs in Africa.

In Pakistan the road freight transport industry was investigated by the Transport and Road Research Laboratory (TRRL) in cooperation with the National Transport Research Centre (NTRC) based in Islamabad [4]. Five different surveys were undertaken; the main component was a roadside interview of 3500 truck drivers which collected data covering trips, loads, tariffs, costs, and the management and operation of the industry. Further surveys collected data on freight consignors, freight forwarding agents, vehicle utilisation, revenues, costs and road roughness.

In Africa the Institut National de Recherche sur les Transports et leur Sécurité (INRETS) and the Laboratoire d'Economie des Transports (LET) together with local university teams studied the road freight transport industries of a number of Francophone African countries with major studies in Cameroon, Côte D'Ivoire, and Mali. In these countries load and freight tariff data was collected from 1500 interviews. Cost information was derived from 150 structured interviews of freight operators. It was found that freight tariffs varied by about 10 per cent between the three countries.

Cost and Tariff Differences

The Pakistan cost and tariff data relates to 1986 whereas the African data relates to 1988. The cost and tariff data are presented in this paper in CFA Francs and the 1986 exchange rate of 21 F CFA to 1 Pakistan Rupee (Pak Rs) is used. (In the period mid 1986 to mid 1988 the price levels in Pakistan, Côte D'Ivoire and Cameroon all rose by about 15 per cent however in the same period the Pakistani Rupee fell in value by 24 per cent so that in 1988 its average value was about 16 F CFA.)

Most long distance freight transport in Africa is by tractor and semi-trailer. For these vehicles, the average tariff for three African countries was found to be 23.8 F CFA (8.3 US cents) per tonne-kilometre (t km) compared with an average tariff of 5.3 F CFA (1.5 US cents or 0.25 Pak Rs) for Pakistan. The rates for the three CFA countries were comparable to rates for international traffic between Zambia, Zimbabwe and neighbouring countries which in 1989 were in the region of 24 to 42 F CFA (8 to 14 US cents) per t km. Similar low rates to those found in Pakistan have also been found for long distance traffic in Vietnam (in 1991 8.7 CFA or 2.9 US cents per t km) and in other Asian countries including India.

It can be seen from the data shown in Table 1 that there were important differences in the input cost components for the tractors and semi-trailers. Vehicles and tyres were over three times the price in Africa compared with Pakistan while fuel was over twice as expensive. Although there were large differences in crew costs amongst the African countries their average was very similar to that of Pakistan. Insurances and taxes were much higher in Africa than in Pakistan.

Table 1. Comparative Input Cost Data

	Africa (1988) (average of 3 countries)		Pakistan (1986)	
	With taxes	Without taxes	With taxes	Without taxes
New Tractor and semi-trailer (1000 F CFA)	44033	35140	13125	10938
Tyre (1000 F CFA)	216	121	74	56
Diesel fuel (F CFA/l)	212	144	89	80
Annual costs (1000 F CFA):				
Total wages and expenses	1393	1393	1356	1356
Vehicle insurance	499	408	2.7	2.6
Goods insurance	293	239	0	0
Licences and taxes	388	-	48	-

(Exchange rates: 1986, US\$ 1 = 350 F CFA = 16.6 Pak Rs
1988, US\$ 1 = 285 F CFA = 18.1 Pak Rs)

Vehicle performance data and estimated operating costs are given in Table 2. From the table it can be seen that vehicles are used much more intensively in Pakistan than in Africa; annual vehicle travel at over 120,000 km per year is more than double that found in Africa and empty running is less. However the actual load carried appears to be higher in Africa than in Pakistan. In Pakistan the most common tractor and semi-trailers were designed for payloads of around 13 t but they were reinforced to carry heavier loads. Some of the tractor units were originally trucks which had been converted with the addition of a 'fifth wheel'.

Vehicle maintenance costs are shown to be over five times as expensive in Africa as in Pakistan. Although road surface quality is an important consideration in maintenance costs it is unlikely that it plays a major part in explaining this difference. The application of road engineering design models that predict vehicle maintenance costs from road surface roughness suggest that these costs are particularly low in Pakistan [5]. Nearly all roads in Pakistan are paved with poor-to-average quality surfaces while in Africa the quality of the road surfaces is more variable. Côte D'Ivoire has a good network of paved roads, most of the main roads in Cameroon are paved although there are important sections which are unpaved while most of the roads in Mali are unpaved.

Table 2. Vehicle Performance Data and Operating Costs for Tractor and Semi-Trailer

		Africa (average of 3 countries)	Pakistan
Annual Vehicle Travel	km	50,000	123,000
Empty travel	%	34	12
Design load	tonnes	25	13
Actual load	tonnes	31.7	25.7
Mean trip distance	km	547	957
Mean trip revenue	F CFA	412, 000	130,350
		F CFA per km	
Depreciation, Interest		101.3	13.2
Fuel		112.4	43.7
Maintenance		90.8	17.2
Tyres		48.1	6.0
Crew		27.9	11.0
Insurance		15.8	0.1
Taxes, Overheads		49.9	3.3
Police, Agents Fees		17.3	7.9
Total costs per km		463.5	102.4
Total costs per t km		21.7	4.5
Mean revenue per t km		23.8	5.3

Table 2 confirms that total operating costs, like tariffs, are also very much higher in Africa than in Pakistan. Despite the low tariffs in Pakistan tractors and semi-trailers are still shown to be profitable.

So far the data presented has been just for articulated vehicles. A similar comparative cost analysis was carried out for a rigid three-axle Japanese truck, designed to carry a 12 t payload, which is widely used in Africa and Pakistan. In Africa this type of vehicle is used more for regional transport, the average load was estimated to be 14.6 t and the annual distance travelled 36,000 km. In contrast in Pakistan three-axle vehicles are used for long distance transport; costs per t km are similar to the tractor and semi-trailers. Like all other vehicles in Pakistan they are reinforced on acquisition so that they can take heavier loads. The average load of these vehicles was estimated to be 20 t and the annual distance travelled 136,000 km. A comparison of costs showed that the African three-axle vehicles were 6.4 times the costs (per t km) of similar Pakistani vehicles.

Discussion

A wide range of factors appear to account for the five fold difference in costs and tariffs between Africa and Pakistan. Pakistan gains from low initial vehicle costs, low fuel and maintenance costs and from high levels of vehicle utilisation.

There appears to be a lack of competition between vehicle importers and dealers in Africa so that high margins are placed on both the initial vehicle price and on the price of spare parts. There is evidence to suggest that high import prices to Africa are not unique to the transport sector [6]. However there is need for further research on the relative contribution of sea transport, port costs and profit margins to total import costs.

In many African countries, with unconvertible currencies, insufficient foreign exchange allocations are provided for lubricating oil and vehicle spare parts. As a result the latter are often smuggled in, attracting very high 'black market' premiums.

Part of the difference in vehicle prices between Africa and Pakistan relate to a difference in vehicle specifications. In Africa, often very powerful, sophisticated and therefore expensive vehicles are used and, despite the higher vehicle speeds (70 to 80 kph) vehicle utilisation is low. This is the result of a number of factors; the low population density and small industrial base of the African countries may make it difficult to sustain a high level of utilisation. It is usual for there to be only one driver per truck, and in many countries night time driving is either illegal or strongly discouraged. Low utilisation also stems from collusion amongst forwarding agents and transporters, in up country locations, to share out the available 'return load' traffic through a system of queuing for loads.

In Africa, particularly in the larger enterprises, vehicle maintenance is usually carried out at the owner's depot. The selection of loads, the collection of revenue and keeping accounts also tend to be arranged at the depot. Drivers are usually given much less responsibility in these areas than in Pakistan.

In Pakistan cheap, rather basic vehicles (with only four or five forward gears) are locally strengthened to take heavier loads and a sleeping/rest compartment is added so that with two drivers one can sleep whilst the vehicle is moving. High levels of utilisation are achieved by using two drivers who drive day and night going from job to job for up to three weeks at a time before returning to base.

In Pakistan drivers usually serve a long apprenticeship as 'conductors' looking after the loads and learning the business. A key advantage of Pakistani drivers is that they are very familiar with all aspects of running a vehicle. The drivers are made totally responsible for finding work, keeping accounts and maintaining their vehicles. However to keep maintenance and fuel costs low the vehicles are driven very slowly (52 kph average spot running speed), the engine oil is changed very often and the drivers continuously check and maintain their vehicles. Larger maintenance jobs are carried out by the large network of small, well equipped, workshops that often specialise in particular repairs. Spare parts are readily available throughout the country; many parts are made locally.

Although greater numbers of heavier vehicles (ie articulated and three-axle trucks) are now being introduced into Pakistan the basic two-axle Bedford truck with a seven ton design payload still accounts for the majority of the total vehicle fleet. The industry is dominated by small scale operators working on a 'for hire' basis. Because of their low costs there is virtually no 'own account' operation by non-transport companies. The industry is very competitive and freight rates are determined by supply and demand. Freight forwarding agents play a pivotal role in the efficient operation of the industry. The agent will entrust goods to the first haulier that accepts the tariff on offer. In 9 out of 10 occasions a vehicle will be found in one hour. Here queuing for loads is prevented by the agent; if he sees a surplus of trucks waiting for business he will respond promptly by lowering tariffs. The agents are themselves in competition, for even in medium-size towns, there may be 15 to 20 agents competing for the same business.

Although road freight transport in Africa is very expensive compared with Pakistan the difference compared with Europe is much less; on similar long distance routes it has been found to be about 40 per cent higher than in France where labour rates are much more expensive. In both Africa and Pakistan there is little demand for specialised vehicles or for the high quality transport services that are found in Europe or North America. The prime requirement is for cheap and readily available transport. Pakistan is able to provide this without recourse to sophisticated management practices or high technology solutions.

A Programme of Action To Reduce African Transport Costs

There are no simple explanations for the high costs of African transport. Pakistan has advantages in its market size and in the skills of its population; its transport sector is also extremely competitive. In contrast the lack of competition in Africa allows high cost practices to continue. Clearly there is a need for many of the characteristics of the Pakistani freight transport industry to be adapted to meet African conditions. The differences in costs are so large that substantial cost savings could be brought about if the African freight transport industry was modified to only a limited extent. In the view of the authors measures to reduce transport costs in Africa might be as follows:-

1. Draw to the attention of all concerned that prices paid for new vehicles and parts are often very high in Africa. Vehicle prices can be overlooked when agreements are drawn up to licence the assembly of imported vehicles. All exclusive importing and dealership arrangements should be examined very carefully.
2. Encourage competition in the importing and handling of spare parts. Where there are unconvertible currencies encourage greater allocations of foreign exchange for lubricating oil and spare parts.
3. Competition in freight forwarding and in the freight transport market should be encouraged. This could be done by first educating freight consignors that they have an important role to play in bringing down transport costs by getting transporters (and freight forwarding agents) to really compete for business. If vehicle utilisation can be increased through greater competition then older less efficient vehicles will go out of business and the requirement for new vehicles should also fall.
4. Competition can be increased by breaking up inefficiently run para-statal transport firms. Non-transport firms should be encouraged to carefully compare their in-house transport costs with the 'for hire' market rates. Finance and training can be made available to assist experienced drivers to set up as owner/operators. In the first instance new operators should be encouraged to start with smaller rigid trucks; the evidence from Pakistan suggests that the largest articulated vehicles are more successfully run by larger firms.
5. A programme of action should be set up to raise the skill levels and access to machinery of vehicle mechanics working in the informal sector. Emphasis should be placed on the repair and the reconditioning of parts - not on the replacement of sub-assemblies that might be more appropriate in developed countries. Many vehicle parts can be reconditioned or made locally and used successfully provided the vehicle is treated with care and not stressed by high driving speeds. However it is important to avoid fitting parts which could be dangerous to use.
6. More responsibility should be given to drivers and they should be encouraged to take a much closer interest in vehicle mechanics and the business side of running a vehicle. Short training courses could be arranged which drivers could be encouraged to attend.
7. Owners and drivers should be informed of the advantages of slow vehicle running speeds. Fuel consumption, maintenance costs and accidents will be reduced. At the same time vehicle utilisation can be increased through the use of two drivers. Driving at night need not be dangerous provided the trucks drive slowly and that vehicle lights are kept in good working order.

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