

**A COMPARATIVE ANALYSIS OF THE EFFICIENCY
LEVELS OF TRANSPORT FLEET MANAGEMENT
SYSTEMS IN KENYA:**

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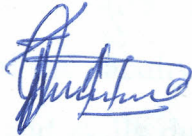


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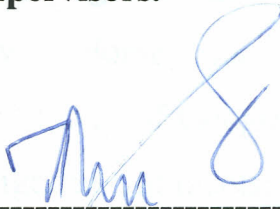
DECLARATION

This research paper is my original work and has not been presented for a degree in any other university.



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ABSTRACT

Public as well as private organizations require efficient and a well-coordinated transport system to enable them realize conveyance of their goods and services effectively. Transport system inefficiency therefore remains a major concern in promoting harmony among various interacting organizational parts and suppliers. Inefficiency could be caused by outright wastage/misuse of transport resources, inefficient utilization of staff arising from improper planing, lack of expenditure containment measures, poor evaluation of the possible transport systems among others. Despite the general awareness, no empirical study has examined the efficiency issues in the transport systems in Kenyan organizations, yet expenditures on transport account for substantial percentages of these organizations annual total spending.

With the prevailing socio - economic crises, increasing scarcity in funds, and implementation of structural adjustments that require cuts in social sector spending, obviously, resources are dying out for transport sections in organizations. There is therefore need to take cognizant of efficiency issues in transport if real saving is to be realized in both profit and non profit organizations. Such an understanding could enable the policy makers and

transport managers to make informed decisions on the allocation of the resources in a manner that maximizes the returns and promote efficient conveyance of goods and services.

This study analyses descriptively the efficiency levels of transport fleet management systems among selected organizations in Kenya. Both secondary and primary data were used to analyze the inputs and outputs of the various transport management systems.

The results reveal that an average efficiency level of 70% is predominant with profit organizations while 35% exists in non-profit organizations. The greatest hindrance to efficiency in transport delivery was associated with the manner in which transport systems are decided upon and their management.

CHAPTER 2: LITERATURE REVIEW

The study has recommended that organizations need to re-examine and appraise their present transport systems, evaluate other possible systems, and make a rational choice based on cost effectiveness and convenience .

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CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

By 1950s organizations were forced to look elsewhere for economies which would keep them a head of their rivals. Naturally, transport and distribution came under scrutiny. The result has been the focusing of attention upon the total distribution process and a continuing search for economies in transport operations¹.

Transport system efficiency is a very important consideration to ensure synchronization of time and space in the movement of goods and people.

A transport system may be defined as consisting of the fixed facilities, the flow entities and the control systems that permit people and goods to overcome the frictional effect of distance efficiently in order to participate in a timely manner in some desired activity².

Transport management system therefore constitutes various functional and operational groups for the effective management and maintenance of a transport fleet. Transport forms an integral component of the communication system within any organization. Public as well as private organizations require efficient and a well-coordinated transport system to enable them realize conveyance of their goods and services effectively.

The transport sector competes, supplements and complements other communication modes available in any organization. Some public institutions in Kenya, as in any other country, heavily rely on transport services for their operations and would be grounded if transport services were not properly coordinated.

A transport system requires a well-designed infrastructure to efficiently operate otherwise it will carry the burden imposed by the infrastructural inefficiency.

¹ Don Benson et al , Transport and Distribution made simple 1975

² Papacostas C.S Transportation Engineering & Planning Second edition

Road transport industry now plays an important role in the economy of any country. It provides an essential link between the provider of goods and the users. Because of the competitive nature of the industry, there is need for effective management and awareness of the consequences of indecision negatively impacting on institutional financial position. There should be planning, control, and co-ordination of the various functions. This may be achieved through budgetary control, standard & related costing techniques and flexibility to change.³

An efficient system of transport management should be derived from the theoretical but implementable structure of management theory, which is user pulled.

Road transport is a vast and growing industry. Of all the modes of inland freight transport in Kenya, road transport handles the largest volume of traffic in terms of weight and distance. Road transport contributed 67% of all freight transport in 1982, 81% in 1991, and 85% in 1995⁴. In terms of expenditure, it's stated that Kshs 1.632 billion was spent on road freight transport in 1996, excluding the net investment in new vehicles estimated at Kshs 2.7 billion⁵, which was invariably quite high.

“If only 1% of the total expenditure could be saved through more effective management, the annual saving could be something approaching \$32million” (Cheserem, CBK)⁶

To the economist, transport is an essential part of the production process. A good has not been fully produced in economic sense until it has actually reached the final consumer who will optimally enjoy it. Therefore a transport worker who brings it from the point of production to the point of consumption is fulfilling a useful and productive service.

³Faunlks, (1990). Principles of transport management

⁴The transport of freight, annual abstract, 1996

⁵Highway statistics 1996

⁶Nation newspaper of March 14, 1997

Similarly, a service made available at any given point is not productive until someone takes advantage of it. Transport is therefore an element of economics, and its demand is derived from the economic needs of mankind.⁷ It serves the distribution function in most production processes, which provides place utility to the consumers.

Van der Hoop noted that distribution until now has involved only junior managers solving tactical problems such as vehicle scheduling or routing of goods, but now senior managers recognize that the solution is more likely to be found in long term research and strategy. That is where the opportunity for making real savings lie.⁸

“Few business managers today question the importance - indeed the necessity – of good transport management system. Instead they look up such system as the nerve center of the entire enterprise. The difficulty is that when the management looks at this nerve center it sometimes concludes that the organization is on the verge of a nervous break down.” (Anderson, 1988)

Available to organizations are a variety of transport management systems, which they can choose from for their operations. The common transport systems include - the Own Account system (OAS), the Private Hire System (PHS), the Lease Arrangement System (LAS) or a combination of any of the three systems. Whichever system chosen has specific cost implications for the implementing organizations. While choosing on a transport system, the organization needs to consider their mission and objective, the implied direct and indirect costs, the duration of the need, nature of transport frequently

⁷ Basset FC M A. Acis Road transport management and accounting.

⁸ Rotich J.K. an application of a transportation model, a case of Kenya breweries ltd. distribution system 1981.

required and historical factors like the possible effect of the system on the organization's image.

In considering which transport fleet management system to adopt, it is also important to note that the transport sector provides work directly and indirectly to companies and individuals. Indirectly, the sector employs vehicle assemblers, insurance companies, Garages and petrol stations. Directly, the sector offers work to drivers, mechanics, touts and conductors among others.

Transport management also entails the way the transport manager handles the various aspects of his job. Unless he is objective in dealing with the people and the situations that arise daily, he may not achieve the goal so vital to prosperity and growth.

To achieve cost control, it is therefore imperative that an efficient transport management system be maintained by an organization.

1.2 Statement of the problem

In Africa, road transport accounts for over 80% of all freight and passenger movement and therefore is essential for the operations of all organizations of the African economy⁹. However, despite the fact that organizations heavily rely on road transport and that this mode of transport handles the largest volume of traffic in terms of weight and distance, the management of transport systems has not been systematically investigated. Research on road transport has paid little attention to the efficiency level determination of the various transport fleet management systems. Undertaking such a task would put base to the inherent problems and potential benefits of each transport management system. Transport management is seen as one gigantic cost problem for organizations¹⁰.

The critical need for efficiency in transport management arises from the following reasons. (1) That most organizations have gone commercial and it is imperative that reasonable profit margins are realized for such organizations to maintain their competitive edge in the industry. (2) That due to the prevailing difficult economic times, government organizations including all state corporations continue to receive reducing financial allocations annually from the exchequer. (3) That the demand for transport services continue to grow in all sectors of the economy due to increased aggression for real output by companies yet the physical infrastructure is alarmingly deteriorating.

“There is little point in costing fleet operations unless the fleet has been properly organized and is being effectively managed”¹¹

⁹ Second UNTACDA II Dec.1990

¹⁰ RG Basset transport management and accounting

¹¹ RG Basset transport management and accounting

Inefficiency remains one of the major concerns to increasing coverage and access to convenient transport service in Kenya. Evidence exist to reveal, among others, low technical and allocative efficiency characterized by under utilization or malfunctioning of servicing facilities and lack of expenditure containment measures in road transport sector (world bank 1991) evidently these types of inefficiencies are costly and a waste of public resources as inputs are not utilized in the most cost effective manner.

Despite this general awareness, no empirical research had been carried out to estimate the magnitude of the mismanagement problem in Kenya's transport sector.

This study therefore investigated and compared efficiency levels of transport fleet management systems among selected organizations in Kenya.

There was the critical issue of identifying the inputs into the various transport management systems and rationalizing the level of input to the expected output. A thorough analysis of the input / output lead to the determination of factors impacting on efficiency.

Overally, based on the determinants of the efficiency, of the various systems, there was need to document the optimal transport management system specific to an organization.

That is, is the transport management system of the organization determined? If so, what is the underlying structure?

1.3 Research questions

The study sought to answer the following research questions:

- a) Who and what needs transport services and in what levels?
- b) What transport fleet management systems are commonly used by organizations
- c) What are the inputs and output of each of the systems? And what are their levels?
- d) How do these organizations plan to improve their transport efficiency?

1.4 Objectives

The overall objective of this study was to analyze and compare the efficiency levels of various transport fleet management systems in Kenya, and on the basis of this analysis, consider what changes are necessary to ensure the institution of cost-effective systems.

More specifically, this study sought to achieve the following objectives,

- i. To identify the operational structure of the various transport management systems used in organizations with differing functions.
- ii. To analyze the factor inputs and output of each transport management system.
- iii. To determine the most efficient transport fleet management system for selected organizations.
- iv. To document the criteria for selecting an efficient transport management system for user organization.

1.5 Justification

With the prevailing socio-economic crises, dwindling donor support and implementation of adjustment programs, that require cuts in social sector spending, resources are declining for the transport sector. There is therefore an urgent need to enhance efficiency in the provision of transport services to ensure more cost-effective use of the limited resources.

Results of this study are significant at the theoretical, empirical and policy levels. It can provide direction to the management and policy makers, on issues such as capitalization, economies of scale, returns to factors and sectorian efficiency levels. The end result would be reducing inefficiency levels and formulating strategies for more effective utilization of transport resources at reasonable convenience.

The study can assist the selected organizations and others to rationalize the choice of their transport management system.

1.6 Scope of the study

The study examined the transport fleet management systems in selected profit and non-profit organizations in Kenya. The study scope was limited to road transport but covered all kinds of road vehicles that form the respective transport fleets.

In particular, the following aspects of transport management were investigated: -

Vehicle management (maintenance, repairs and replacement), Staff management (driver, mechanics & the users) and Fleet size planning.

CHAPTER 2: LITERATURE REVIEW

2.1 Kenya's Transport studies

2.1.1 Transport research focuses

Transport studies carried out on Kenya have examined a wide range of issues such as movement of goods and people, transport network growth and development, trip generation- attraction and impact of transport. These studies have been done at various spatial scales (urban, rural, regional, and national levels). Some of them were on specific transport modes such as railway, road, and ports while others concentrated on specific transport issues such as the role of transport management on the growth of the Kenyan economy, household travel characteristics and the role of transport in economic development. Included in this latter, are also studies on road traffic accidents (Maina, 1978, Miyanji, 1976, Kwamina J.W.D. et. Al. 1976), these studies have shown that transport services are very crucial in the functioning of the Kenya's space economy both at the micro and macro levels. These studies also reveal that Kenya's transport system is faced with challenges that need to be addressed e.g. extension of transport networks into areas with limited transport facilities, rural transport problems, and road traffic accidents.¹² Khayasi (1997) also conducted a study on the working conditions of the transport workers. However these studies have not addressed the issue of efficiency levels in various transport fleet management systems which this study seeks to investigate.

¹² Khayesi M. Analysis of terms and conditions of work in the matatu industry in Kenya : a study of Nairobi Thika and Ruiru towns (draft research report, submitted to the institute for Development studies , UON.

2.1.2 Transport research variability

Langat (1996) attempted to develop a computer based information system for a passenger bus transport company in Kenya, as one of the ways of stream lining its operations with respect to information processing and to improve its efficiency. The rationale behind this research was that public road transport is a fast growing industry that requires up-to date information to achieve the right level of efficiency. In his study, Esmailjee (1995) aimed at documenting and evaluating the internal control systems of Nyayo bus corporations in Nairobi. The research revealed that all organizations are faced with scarce and limited resources, which constrain them from meeting their goals and objectives. Esmailjee also found out that it is the responsibility of the management to device, establish and supervise the implementation of internal controls through which resources can be efficiently and effectively allocated and utilized.

A world bank report indicates that road transport in developing countries is a very important sector for meaningful economic activity and sound investment, and functions as a catalyst to the overall economic and social development process¹³. This bears the implication that efficient transport management systems should be a priority to organizations. Given the nature of the physical infrastructural designs, prevalent in the developing countries, it is crucial and indeed inevitable that organizations employ investment policies, which consider transportation a primary issue.

Osundwa (1987) examined the demand for transport services in the city of Nairobi. Her research covered among other things, commuter choice of transport among government and privately owned means of transport, and analyzed the relationship between socio-economic characteristics of commuters and the attributes of the transport modes. This

research has an implication that commuters require effective and efficient means of transport.

Kapila et al (1982) through Mazingira Institute conducted a research on the provision of efficient, safe and adequate public transport in Nairobi. The research focused on the role of matatus and investigated means of continuing their financial viability under various conditions. However, this study majorly dwelt on the convenience aspect from the commuter point of view and lacked content on economic efficiency on the part of the vehicle owners.

Okecho (1995) in his study of distribution planning using a transportation model noted that distribution has always been the main business activity concerned with the movement and storage of products. He observed that distribution planning is quite a recent phenomenon since, it is only a few years ago, that most organizations began to realize that big potential saving in terms of money and cost of sales exist in this area. However for its full benefit to be realized, Okecho found out that planning must be carried out efficiently using the most modern techniques.

Referring to distribution as “physical distribution”, Felix Wentworth quotes CPDM¹⁴ definition of distributions as:

“The broad range of activities within a company concerned with efficient movement of goods and materials both inwards to the point of manufacture and outwards from the end of the production line to customers.”¹⁵

¹³ World Bank road transport research , road monitoring for maintenance management Vol.1 manual for developing countries page 5

¹⁴ CPDM: Center for Physical Distribution Management, England.

¹⁵ World Bank road transport research, road monitoring for maintenance management Vol.1 manual for developing countries.

Felix Wentworth adds that physical distribution management aims to achieve the highest measure of efficiency in physical distribution activity. This efficiency can be measured in terms of cost and quality of service.

Charles Smith describes “quality of transport service” as the time required to move from one point to the other to effect delivery under normal conditions. The time has to be minimized if the quality of transport service is to be maximized. The cost element involves the money value of the service rendered for the movement. This must be minimized too.

Jarabi (1882) attempted to evaluate the extent to which the supply of urban transportation services can be compared with the demand under the condition of increasing urban growth rate. Jarabi used Kenya bus service and Matatus as public transport carriers in evaluation. However the study was limited in scope and only examined commuter demand, without extending to the issue of efficiency.

In a study of the distribution system of Kenya breweries Ltd. (now East African breweries Ltd.) Rotich J.K (1981) made an attempt to determine through the use of a linear programming technique called the transportation problem, how optimal scheduling of products from various sources (breweries) to the numerous destinations (depots) can be achieved. Rotich studied how the cost constraint could be minimized to ensure improved quality service and boost the image of the organization to the public.

Gupta (1981) carried out a study on the repair and maintenance work performed by the operations and maintenance section of Nairobi city council’s water & sewage department. This research revealed that the present system is operating in efficiently and highlighted the inefficiency areas. Gupta gave recommendations for improvement especially in

communication system, scheduling procedure, maintenance system, labour assignment and material acquisitions.

However Gupta's research did not attempt to compare different fleet management systems, to determine their efficiency levels. This research was confined only to the city council department and was not open to organizations, which also rely on transport services for their operational efficiency.

2.2 THEORETICAL EVALUATION OF THE TRANSPORT

FLEET MANAGEMENT

2.2.1 Haulier vs. own account operation

Basset (1984) asserts that both **haulier**¹⁶ and own account operation are concerned with the transportation of freight from A to B in the most effective manner and both are concerned with cost control.

That the major difference between the two operations, is the profit motive. The haulier carries for hire/contract and reward whereas the Own Account System (OAS) carries the company goods without apparent reward.

According to Banister (1994), there are three aspects of OAS Profit namely cost saving, economic profit and actual profit.

2.2.1.1 Cost saving

The importance of cost saving in private transport is no different from that in Haulage operations. By minimizing transport costs the company profits is enhanced. Annual saving of say \$50,000 would increase profit by the same amount; this illustrates the fact that transport managers are motivated by the profit factor in terms of cost saving.

The economic profit is the difference between the OAS minimum operating costs at maximum efficiency (or actual costs) and the cost of outside transport services. (i.e. using

¹⁶ Haulier refers to any other transport fleet management system other Own account system

contract services instead of company vehicles.) Economic profit can thus be expressed as external transport cost less own transport cost.

2.2.1.2 Economic profit

Economic profit shows whether or not the investment in the company 's fleet was earning an adequate return or operating below optimal level.

If for example, the economic profit was \$10,000 and the average investment \$50,000 the return of 20% would be considered satisfactory.

Own account transport profit (OAP) can be expressed simply as Transport revenue (TR) Less transport operating costs (TC) and the result would be a profit of loss.

2.2.1.3 Actual profit

Actual profit is the difference between total revenue generated from transport services rendered to chargeable users and the total cost in absolute terms incurred to meet the transport needs of the organization and in maintaining the transport facilities.

2.3.0 Own account system and profit

A number of Own account operators have organized their transport function into separate limited companies, charge out their services at selected traffic rates and show a profit at the end of the trading year.

Many transport departments adopt a similar procedure and produce profit and loss account on a regular basis.

OAS includes such sub-systems as Vehicle maintenance and replacement procedures, fuel and oil control procedures, driver management system, and insurance and legislation procedures.

2.3.1 Vehicle management

Goods vehicles should be of the right shape and size (i.e. type and capacity) of the right number and mix, they should be clean, well maintained and replaced at the right time. Vehicle management also includes the acquisition method, and in addition, orders and regulations must be taken into account. Vehicle maintenance, replacement and legislation, together with driver welfare considerations, are all closely inter-linked and have respective impacts on vehicle management hence must not be taken for granted.

2.3.1.1 *Vehicle maintenance and repairs*

Vehicle maintenance is a crucial component of transport management, it is a primary responsibility of the transport manager, garage foreman and the driver to ensure that the vehicle is of sound “health” by providing reasonable care and attention at all times. Vehicle maintenance should of necessity include, regular engine check up, oil system servicing, and fuel system clean up, regular replacement of the suspension system, transmission system examination, regular auto-electrical checkup, proper tyre management and consistency in cleanliness of the vehicle.

For instance, a proper tyre maintenance program should include: -

- i. A regular tyre inflation schedule
- ii. Monthly tyre removal analysis
- iii. Regular tyre inspections for removal of re-treadable casings and repairable casings.
- iv. Maintenance of a master air gauge for service gauge calibration application of the correct tyre and rim combination
- v. The use of educational training meetings to emphasize tyre care and service to drivers, mechanics and tyre maintenance men.

To sustain a proper vehicle management, the degree of maintenance required should depend upon vehicle design and suitability to the job it performs, operating conditions, terrain and climate, driving skills, maintenance policy and the regulations concerning vehicle roadworthiness.

The transport manager should satisfy himself that all vehicles are road worthy when they leave the yard, even though this may be the prime responsibility of the fleet engineer or garage foreman.

The fact that poorly maintained vehicles can kill, incur the operator with heavy fines, and upset the scheduling routine, are reasons enough for effective management in this area.

The transport manager and fleet engineer have un-written responsibility to the company, customer, driver, the public and indeed the law to maintain the fleet in effective working order. A maintenance policy is the best way of controlling the maintenance problem. It should be in writing, specifying the procedure and format to be adopted and assign responsibility.

Many companies use maintenance schedule, where by vehicles undergo regular inspection checks and routine maintenance at selected intervals.

Once the maintenance schedule has been drawn up and agreed upon, the transport manager will know when certain vehicles are required in the workshop (and indeed when certain vehicles should be returned) and with this be able to plan for the contingency well in advance.

2.3.1.2 Vehicle replacement

Although vehicles will run forever if properly maintained, there are good reasons for replacing them at certain intervals. Escalation in maintenance costs as a vehicle gets older (and the difficulty of obtaining spare parts) is one major reason for maintaining a schedule of disposal and replacement. The need to invest in more modern vehicles to

enhance operating efficiency and preserve the company image is the second important reason for a policy on replacement. Another reason is change in business activity (i.e. a customer requiring special purpose vehicle.)

When should vehicles be replaced?

Theoretical literature indicates that vehicle replacement depends on the company policy and any of the reasons above or availability of funds. It should also be pegged on the capital expenditure budget, which summarizes the expenditure on fixed assets for a specific period. Many companies adopt inspection approach where they consider the recorded maintenance costs to date and the fleet engineer's report. Others fix replacement dates based on past experience with the type of the vehicle being considered. Some operators are known to base their replacement policy on plant replacement theory, which takes into account capital, maintenance and depreciation costs and ignores running costs.

2.3.1.3 Vehicle legislation

Operators who sub Contract repair work to garages should remember that they are still responsible for the condition of their vehicles even though defects may be the result of ineffective workmanship at the garage. Inspection checks, as part of maintenance policy is a legislative requirement (road safety act). Studies conducted in this area indicate that operating conditions and 'mileage' are the prime determinants of how often a vehicle should be inspected. The transport manager should therefore remember that there are specific legal reasons why vehicles should be properly maintained. The need to keep informative maintenance records, (inspection reports, driver's defects reports, repair and maintenance worksheets) cannot be over emphasized.

2.3.1.3 *Driver management*

The employment, training and motivation of drivers and the need to ensure that they work within the parameters of the company procedures and laws are also important features of transport management.

The effective utilization of the vehicles is in the drivers' hands. Many operators employ productivity schedules to motivate drivers to improve their performance. Motivating factors other than financial rewards include general conditions of service such as pension, sickness and holiday schemes; social - club and sports facilities; staff uniforms; training and development opportunities, and an effective management team that inspires confidence among its employees. The legal side of the driver management must also be considered that is, besides the fact that each driver must be fully qualified to drive, having regard to age and driving license, there are the matters of driving hours, break and rest periods, and driver's records. Failures to comply with the regulations and orders, which follow the transport act, would involve both the company and the driver in heavy penalty.

2.3.1.4 *Insurance matters*

Existing literature indicate that the matter of insurance may not necessarily be the responsibility of the transport manager except possibly in the case of the small company where there is no qualified officer to handle it. In other cases the transport manager will certainly be involved in the fleet insurance matters if only to advise the company secretary or accountant on historic or pending charges. The first requirement of the road traffic act is that all vehicles must be covered by third party insurance. Evidence that the requirement has been met is the current certificate of insurance.

The literature reviewed indicates that transport is an important service required in the functioning of Kenya's space economy, both at the micro and the macro levels. These

CHAPTER 3: METHODOLOGY

3.0 Target population

The data used in this study were collected from public and private universities, banking institutions, print media firms, research institutions, and manufacturing firms, that require services of a fleet of vehicles and which have mandatory transport services to provide on routine basis.

3.1 Sampling strategy and frame

The population under study was stratified into profit and non-profit making organizations, where stratified random sampling method was used to select a representative sample size. The twenty seven (27) organisations that responded comprised of three public universities, two private universities, two tertiary colleges, one research institution, three revenue collection corporations, ten banking institutions, three manufacturing firms and three print media companies. For each of these facilities annual data were obtained. A survey was also carried out to provide first hand information on the causes and effects of the inefficiency from the perspective of the facility managers/in-charge. This involved an evaluation of the utilization of transport inputs in the delivery of the outputs.

The selected facilities were visited and interviews were conducted with the administrative staff in-charge in addition to the use of structured questionnaires. Focussed group discussions were also held with the transport managers and several policy implementers to obtain their assessment of the problem.

3.2 Modeling

The estimation of a service sector cost functions may employ unit cost specifications, where the average service cost is considered as a function of interrelated explanatory variables that are inputs into the service system.

According to Barnum and Kurtzin, (1993), studies related to the formulation and application of cost functions have their inherent pitfalls, i.e. their use of cost formulations are not derived from theory but are rather defined for the convenience of estimation. As such these studies have suffered problems of interpretation of the estimated results. Transport, being a commodity purely of service nature would suffer such consequences if its efficiency were determined the same way.

To avoid the occurrence of such problems, more recent studies have tended to

- (1) Distinguish between short run and long run production and cost functions,
- (2) Specify the functional forms and include only those variables that are consistent with a theoretical production structure and
- (3) The economic interpretation of the results, in the more recent studies, is also made easier by the regularity condition that relates theoretical production and cost structures.

3.3 Model specification

The model to be estimated is shown in equation 1 which is linearized in equation 2 below.

$Cost_k = c$ [maintenance cost, staff allowances, average wage, fuel consumption, insurance cost, hiring expenses]

$$Cost_k = c (Mcost, SAllow, AWage, Fcost, Incost, Hcost)$$

-----1

Assuming a non linear relationship, its natural logarithmic form is used and is specified as follows:

$$\ln cost_k = \alpha_0 + \alpha_1 \ln Mcost + \alpha_2 \ln SAllow + \alpha_3 \ln AWage + \alpha_4 \ln Fcost + \alpha_5 \ln Incost + \alpha_6 \ln Hcost + v$$

-----2

Where α_i defines the parameters to be estimated, while v , the composed disturbance term. Table 1 defines the variables more succinctly.

3.4 Definition of variables (Table 1)

Variables
<p><i>a) Dependant variable</i></p> <p>Costk = short – run total cost of a facility measured by the annual recurrent expenditure</p>
<p><i>b)Independent variables</i></p>
<p>Mcost = Maintenance cost - cost for repairing and maintaining the vehicles and related equipment.</p>
<p>Sallow = Staff allowance - financial remuneration over and above average wage, given to staff while on official trips out of normal work station.</p>
<p>Awage = Average wage - a proxy for the price for labor as paid or recommended for the transport staff, also referred to as salary.</p>
<p>Fcost = Fuel consumption - average fuel and oil consumption per annum.</p>
<p>Incost = Insurance cost: expenditure incurred on insurance for the transport facility per annum</p>
<p>Hcost = Hiring cost - expenditure on external transport hired to support the transport demand or supplement the internal facility</p>
<p>Ageveh = Age of vehicle - period vehicle has lasted since manufacture</p>
<p>Ndriv = Number of drivers – total number of drivers employed in an organization</p>
<p>Qboss = Qualification of boss – educational and professional qualification of the person in-charge of transport services.</p>
<p>DISPO-P = Policy on disposal and / or replacement of vehicles.</p>

Chapter 4: Study findings and interpretations

4.1 Introduction

Data generated from this research was coded, computer formatted and analyzed using Microsoft excel, SPSS and Microsoft word computer software. Both quantitative and qualitative data were extracted for appropriate analysis. The first stage of the analysis involved the estimation of each system specific efficiency through the estimation of average cost input data per system. Thereafter, factors affecting the transport system indicators were analyzed using regression and correlation to determine respective return to variable inputs. An examination of survey data was carried out to highlight the causes of inefficiencies and their impact on transport service delivery. The results were finally presented in both descriptive and inferential modes.

Transport systems investigated included: - Own account system, hiring system, lease arrangement system, a combination of Own account & hiring system and a combination of Own account & lease arrangement systems. Each system was coded as in table 1 for analysis purposes.

Table1: system coding

System	Code
Own account	1
Hiring	2
Lease arrangement	3
Combination of own account & hiring	4
Combination of own account & Lease arrangement	5

4.2 SYSTEMS INPUT / OUTPUT ANALYSIS

The following section contains the analysis of the respective inputs and output of the transport management systems.

4.2.1 SYSTEMS' AVERAGE TOTAL COST

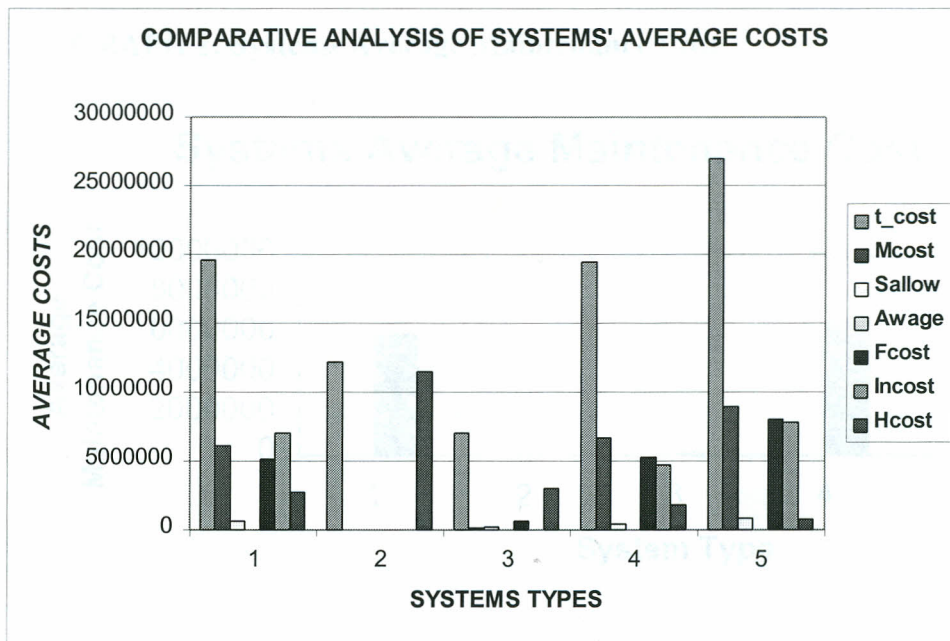
Table 2 : Systems Average Cost Data

	T-cost	M-cost	S-allow	A-wage	F-cost	In-cost	H-cost
1	19571429	6134211	654444.4	16644.74	5125263	7042105	27466
2	12150000	0	0	32500	0	0	11500000
3	7025000	125000	200000	13750	650000	0	3025000
4	19428571	6714286	451428.6	11300	5304286	4692857	1857143
5	27000000	8966667	833333.3	18566.67	8000000	7786667	800000

The results as shown in table 2, indicate that system 5 experiences the highest average total cost when compared with the other systems while system 3 was the least costly of them all.

This implies that organisations using a combination of system 1 & 3 incurs higher overall transport expenditures compared to the proportions associated with the other systems. The data also indicate that organizations using system 3 alone spent less in comparative terms than organizations that use the other systems. This is explicitly evident in graph 1.

GRAPH 1. COMPARATIVE ANALYSIS OF SYSTEMS' AVERAGE COSTS



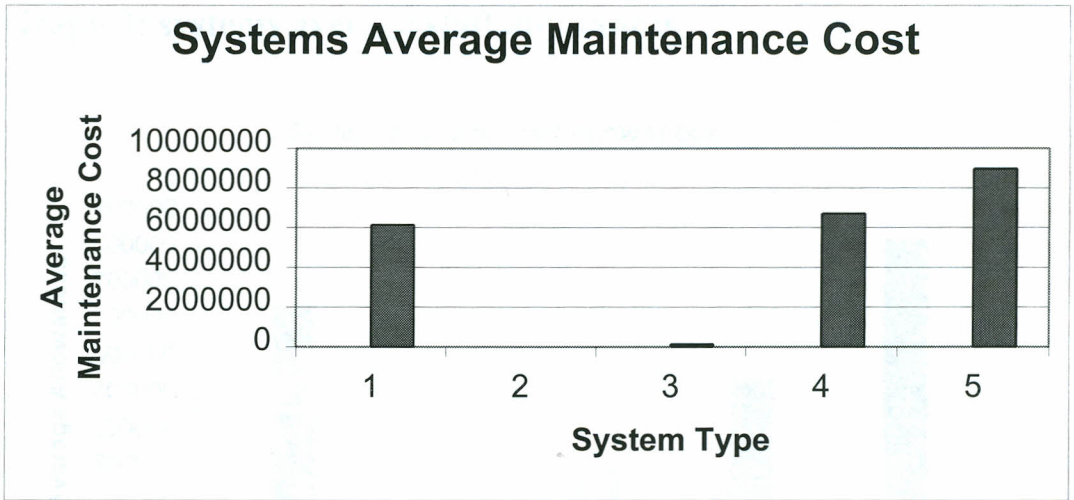
It is clear that most systems incur a greater proportion of their total costs on maintenance, staff allowances, fuel and insurance.

4.2.2 SYSTEMS AVERAGE MAINTANANCE COST

The systems average maintenance cost depicted on graph 2 indicates that system 5 experiences the greatest financial impact from costs associated to maintenance of vehicles as compared to the other systems. The data also indicates that this input consumes up-to 30% of its total transport expenditure. As is evident from the same graph, system 4 is ranked second and system 1 ranked third. The high impact of the maintenance costs on these systems arises from the obligations that such organizations have to repair, service and maintain their own vehicles. System 3 is affected very

marginally while system 2 is not subjected to maintenance expenditure at all since the maintenance of such vehicles is vested with the source companies.

GRAPH 2: Systems Average Maintenance Cost

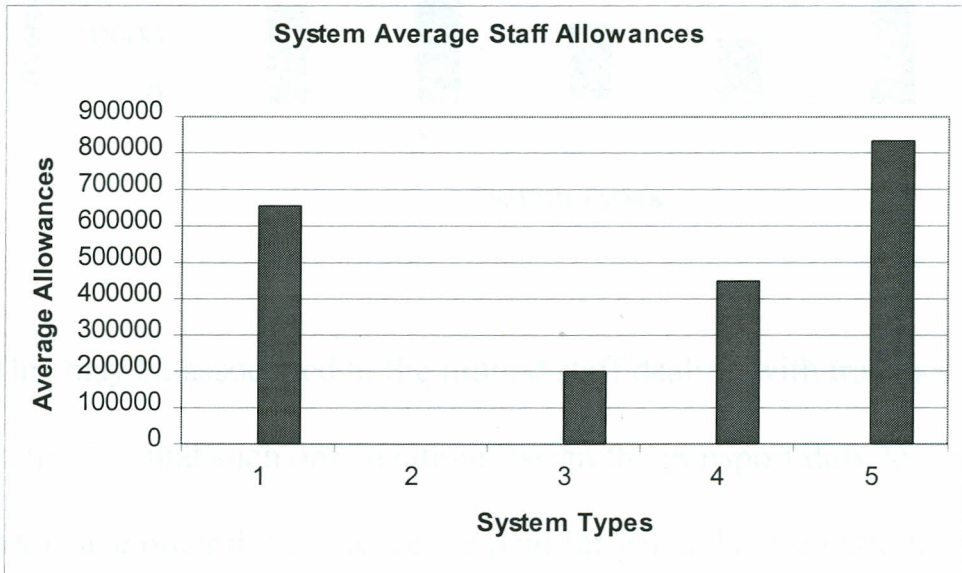


4.2.3 SYSTEMS AVERAGE STAFF ALLOWANCES

System type 5 exhibits a tendency to allocate more funds to staff allowances (Graph3). This arises from the fact that both staff engaged to operate the organizations' own vehicles and those who are assigned to the vehicles acquired through lease arrangements require to be compensated any time they are sent out on official duties out of their respective work stations. It is also observed that system 1 and system 4 spend more or less the same proportions on this variable because of the component of staff employed to run organization's own vehicles. Such staff like those in system 5 must be compensated for out of station trips. On the other hand the results show that system 3 is affected very slightly by this variable.

This is due to the fact that many lease arrangement systems cover majority of recurrent expenditures, to which respective staff allowances form part.

Graph 3: systems average staff allowances

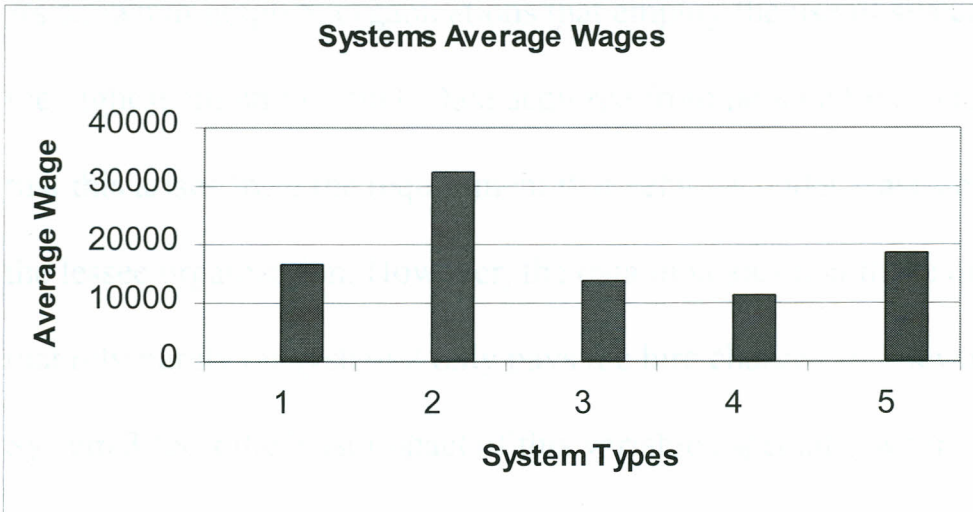


System 2 is the least affected since transport facility hired from outside comes with its own staff who are compensated from the source company.

4.2.4 SYSTEMS AVERAGE WAGES

Wages in this study refers to the remuneration paid to staff, commonly on monthly basis, for labour supplied during the course of normal service, also known as Monthly salary. From graph 4, it is evident that system 2 offers the highest average wages to its staff as compared to the other systems.

Graph 4: systems average wages

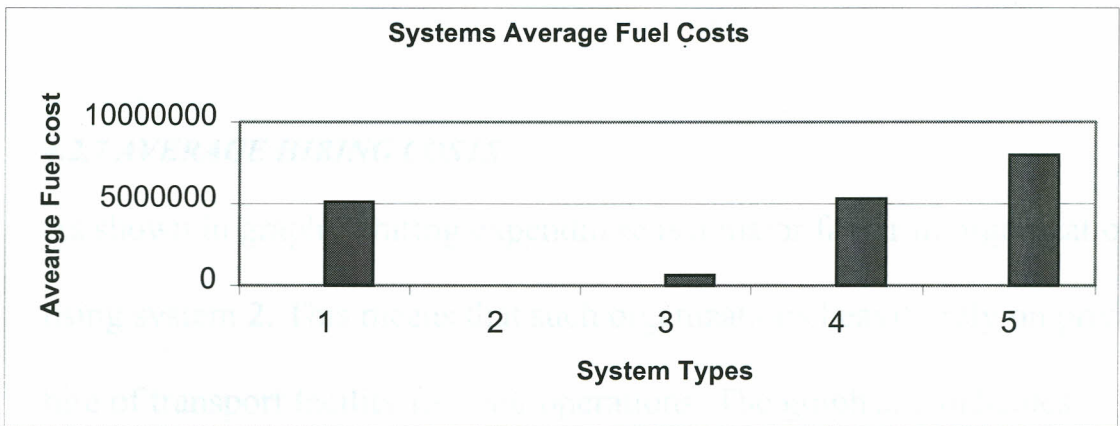


This may be associated to the limited staff dealing with transport matters or to the fact that such organizations assign the transport duty to a few staff who have other duties, hence are paid for general administration rather than for being transport managers. Those organizations that depend on outsourcing of transport have left the transport headache to their transport source company, hence are able to offer wages commensurate with the job positions of their administrative staff who deal with transport matters just as a small piece of their work.. All the other three systems require to have more staff to operate and /or maintain their own vehicles or the vehicles under lease, a reason that can explain the low average wages depicted for such systems.

4.2.5 SYSTEMS AVERAGE FUEL COSTS

As shown in graph 5, organizations that employ the use of system 5 spends the highest amount on fuel. Data acquired from personal interview indicated that this arises from the requirement that vehicles under lease are fueled by the lessee organization. However, the data indicates that those organizations that rely purely on system 2 only pays the hire charges and never for fuel. System 3 feels the least impact of this variable especially where the lease arrangement specifies the level of fuel to be provided by the lessor organization above which the lessee organization is responsible.

GRAPH 5: Systems Average Fuel Costs

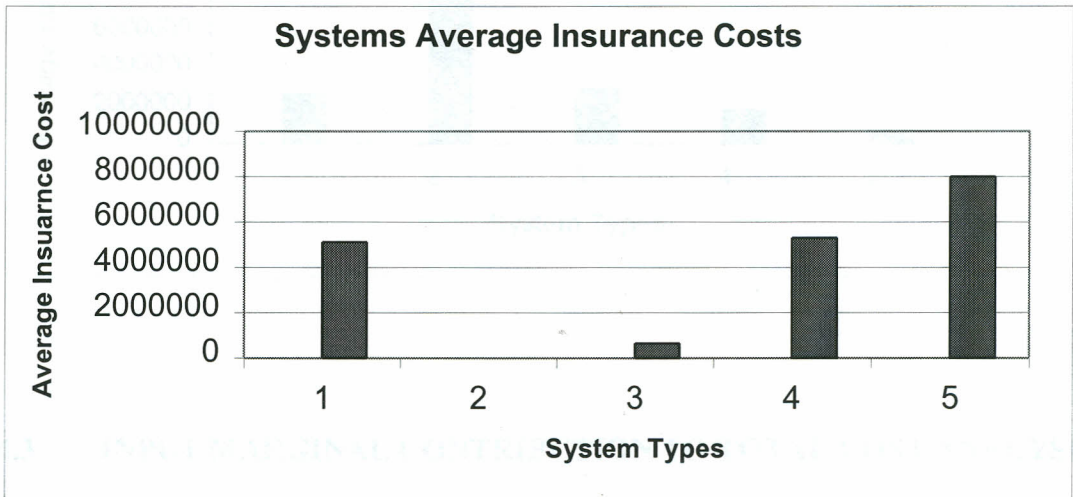


4.2.6 SYSTEMS AVERAGE INSURANCE COSTS

Insurance cost as an input to transport systems is revealed by the finding (graph 6) to impact highest on organizations which, use system 5 followed by system 1 then system 4 while system 3 the least. This implies that whenever an organization is using own vehicles or vehicles possessed by the organization through lease contract, such organization is under legal obligation to insure such vehicles against possible risks.

On the other hand, privately hired transport facility is covered against risks by the Source Company.

GRAPH 6: Systems Average Insurance Costs

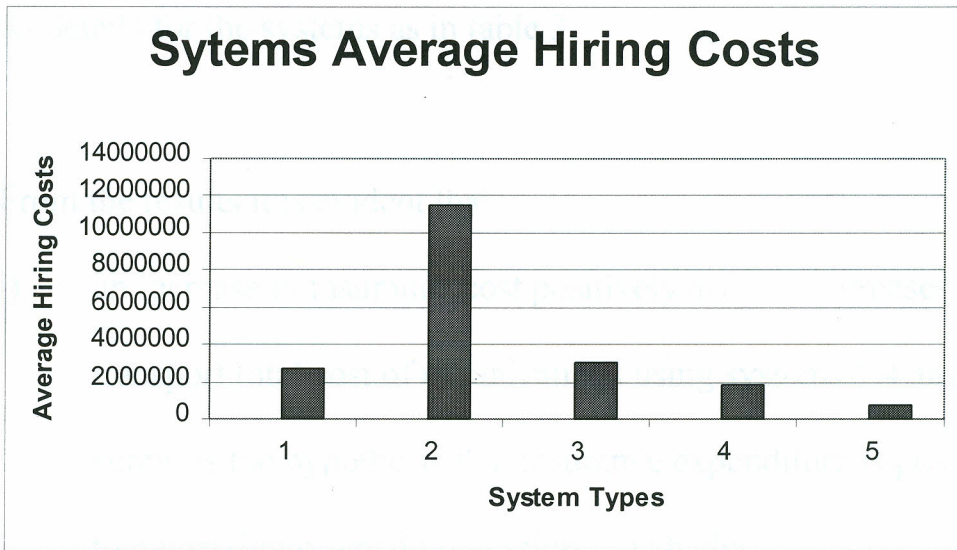


4.2.7 AVERAGE HIRING COSTS

As shown in graph 7, hiring expenditure is a major factor in organizations using system 2. This means that such organizations heavily rely on private hire of transport facility for their operations. The graph also indicates organizations using the other systems still require, at varying levels, private hire facilities as supplements especially during crises and emergencies.

It is evident that where hiring cost component takes up the greatest percentage of the transport total expenditure, the costs on the other variables is negligible.

GRAPH 7: SYSTEMS AVERAGE HIRING COSTS



4.3 INPUT MARGINAL CONTRIBUTION TO TOTAL COST ANALYSIS

The contribution of inputs to total cost when subjected to linear regression analysis produced the following results

Table 3: Input marginal contributions

Entered variable	Standardized coefficients				
	System 1	System 2	System 3	System 4	System 5
In Incost	0.938	0.000	0.000	0.437	0.906
In Sallow	0.084	*	*	-0.130	0.554
In Hcost	0.000	*	*	0.419	0.000
In Awage	0.034	*	*	-0.024	0.000
In Mcost	0.000	*	*	0.603	0.000
In Fcost	0.000	*	*	0.000	0.000
Adjusted R squared	1.000	*	*	1.000	1.000

The linear regression model yielded the standardized coefficients and the R- details for the systems as in table 3.

From the results it is evident that

- i) an increase in insurance cost positively affects (increases) the transport total cost of organizations using systems 1,4 and 5. This supports the hypothesis that insurance expenditure is positively related to ownership or legal possession of vehicles.
- ii) a change in staff allowances positively impacts on systems 1 and 5 but causes an insignificant effect on system 2 and 4. This confirms the hypothesis that staff allowances is significantly necessary in all systems.
- iii) a change in hiring cost positively affects system 2 and 4, marginally affects system 1 and 3 but does not have any significant impact on system 5. This is in agreement with the null hypothesis that hiring cost is significant for the organizations that depend on outside transport.
- iv) a change in wage rate affects system 1 positively but impacts negatively on system 4.
- v) a change in maintenance cost causes a positive change in system 4. This supports the hypothesis that users of own fleets of vehicles have to spend a lot on maintenance.

4.4 Factors Influencing Transport Systems Performance Indicators

4.4.1 Causes of inefficiency

Part of the investigation was to determine the causes of inefficiencies and their impact on transport delivery by various systems. The findings revealed the existence of high correlation among other factors that influence transport system performance. Factors considered in this category of influencers included: -type of organization; title, education and profession of transport In-charge (manager); level of transport authority in the management structure; number of vehicles owned or required; age of owned vehicles; disposal policy; schedule of inspection and maintenance of the vehicles; education and profession of drivers; frequency of driver retraining; driver experience and type of transport system prevalent in organizations.

4.4.2 FACTOR CORRELATION

The correlation among the variables (table 4) was found to be generally average, with the highest correlation recorded between the driver experience and type of organization (0.735), implying that organizations that manage their transport systems by use of own vehicles, require to consider the experience of the drivers, to be able to achieve satisfactory performance. Driver retraining and type of system was 0.495 implying that retraining of drivers is positively and significantly related to the efficiency levels of the systems that require own drivers, disposal policy and type of organization was found to be 0.427 correlated. Implying that disposal policy is positively related to the nature of the organization. The highest negative correlation was shown to exist between frequency of vehicle maintenance and the disposal policy (-0.633), which does not bear relevant meaning as far as efficiency is concerned.

Table 4: Correlation among variables that influence performance indicators**(Based on the Type of system (T-system) as the dependant variable)**

	VF-MANT	T-ORG	I-TITTLE	I-EDU	I-PROF	D-EDU	D-PROF	D-RTN	D-YEXP	DISP-P	T- SYST
VF-MANT	1.000										
T-ORG	-0.132	1.000									
I-TITTLE	-0.208	0.329	1.000								
I-EDU	-0.302	0.176	0.189	1.000							
I-PROF	-0.202	0.201	0.450	0.040	1.000						
D-EDU	-0.112	0.306	-0.100	-0.054	0.015	1.000					
D-PROF	-0.093	-0.214	-0.417	-0.217	-0.455	0.241	1.000				
D-RTN	0.005	0.059	-0.286	-0.557	0.005	-0.160	0.137	1.000			
D-YEXP	-0.133	0.735	-0.047	0.296	-0.208	-0.157	0.112	-0.049	1.000		
DISP-P	-0.633	0.427	0.331	0.126	0.463	0.091	-0.279	0.144	0.239	1.000	
T-SYSTEM	-0.360	-0.124	-0.184	-0.196	0.063	0.104	-0.412	0.495	-0.008	405	1.000

The linear regression resulted in an R- square of 0.883, which means that the variables included in this model explained 88.3% of the variables that determine the efficiency levels of the transport systems.

4.4.3 Variable elasticity

Table 5 presents the results of the variable elasticities and t- ratios. The results reveal that most of the explanatory variables have elasticities, which are significantly different from zero at the 5% level.

4.4 Factor influence's path model analysis

Table 5: t- ratios of the variables that influence the performance indicators.

(Based on the type of system (T-system) as the dependant variable)

	Std. error	Standardized coefficients	t-ratio
Constant	5.042	-	-0.534
T- ORG	1.296	-0.412	-1.064
I-TITTLE	0.358	-0.236	-0.726
I- EDU	0.741	0.155	0.575
I-PROF	0.355	0.610	1.976
D-EDU	1.686	-0.524	-1.590
D-PROF	0.393	0.635	2.133
D-RTN	0.313	0.387	1.323
D-YEXP	1.440	0.678	1.424
DISPO-P	0.815	0.613	1.507
VF-MANT	1.419	-0.461	-1.120
SCH-BASIS	1.138	-0.943	-1.871
MANT-STAT	1.253	0.631	1.686

5.0 conclusion in - chapter

The data regression model of a factor of 15 variables D-EDU, I-EDU, I-PROF, D-EDU, D-PROF, D-RTN, D-YEXP, DISPO-P, VF-MANT, SCH-BASIS, and MANT-STAT. The dependent

4.4.4 Factor Influence Significance Analysis

Table 5 shows a computed t-ratio of the variable **T-ORG** (type of organization) as -0.1064 . This implies that this variable is positively related to the type of system in place at the organization. This supports the hypothesis that type of organization influences the choice of transport system.

The regression analysis generated t-ratio of -0.726 (**I-TITTLE**) this implies that the title used for the person heading the transport operations is not positively related to any system. It rejects our null hypothesis that in-charge title has a positive bearing on the efficiency of any system.

The variable (**I - EDU**) recorded a positive t-ratio 0.575 implying that high education of the in-charge is positively related to the type of system. This confirms the hypothesis that the choice and efficiency of a system highly depend on the education level of the officer in-charge.

From the regression table, a t-ratio of 0.198 was calculated (**for I- Prof**), implying that this variable is significant and positively related to the type of system. This supports our assumption that efficiency of any transport system requires relevant qualification of the person in – charge.

The data regressed produced a t-ratio of -0.1590 for **D-EDU**. Implying that high education of the driver is negatively related to the performance of a system. This does not

support our hypothesis that efficiency level of a transport system depends significantly on education level of the drivers.

The regression analysis also computed t – ratio of 1.323, for **D-RTN**, indicating that this is a very significant variable to a transport system and has a positive influence. This is in conformity with our assumption that frequent re-training of the drivers is necessary for improved performance of a transport system.

In the tabulated regression results, a computed t- ratio of 2.133 was generated for the variable **D-Prof**. This shows that driver profession has a strong bearing on the type of the system and confirms our null hypothesis, that efficiency of a transport system relies on the profession of the drives.

For variable **DISPO-P**, the regression analysis computed a t-ratio of 1.507, implying that the policy on vehicle disposal has a positive correlation to the type of system. This supports our hypothesis that policy on disposal of vehicles influences the efficiency of a transport system where own vehicles are used.

A t-ratio of – 1.120, was generated for the variable **VF-MANT**, implying that frequency of vehicle maintenance is negatively related to the type of system. This has deviated from our assumption that maintenance of the organization vehicle has a positive impact on the performance of the system.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This study set out to estimate transport systems efficiency levels and to offer a comparative analysis of the systems used in various organizations in Kenya. The results revealed that an average inefficiency level of 30% was predominant with profit oriented companies which operate at relatively lower average costs, and 65% with non-profit organizations where expenditures on transport are barely controlled.

The inefficiencies are largely attributed to:- use of non- professional staff to manage the transport facility, poor evaluation and choice of transport system, use of drivers who possess only the driving license, non- existent policy on disposal of vehicles, poor servicing of the transport facilities, too many staff in the transport sections, and poor staff motivation. In general, these results mirror the average for many organizations in Kenya. Nevertheless the situation could be improved if the causes of the problems are effectively addressed.

Enhancing efficiency in transport system of any organization in general is of great policy relevance. Savings so realized, both in time and resources, could be used to improve the operations of such institutions by re-directing such funds to other productive ventures in line with the organization's mission. Improvement of transport efficiency levels is generally associated with a rise in the quality of services and the general care for the organizations transport requirements. But specifically this depends on the evaluation and choice of the transport system inputs.

This study reveals great potential in promoting efficiency in the institutional transport operations. This is evidenced by, among others, the existence of increasing returns to variable factor inputs noted from the correlation of type of system with, in-charge education and profession; driver education and re-training; disposal policy; and frequency of vehicles maintenance. Economies of scale can also be substantially realized if dealer oriented maintenance is limited, fuel cost monitored and insurance restricted to running vehicles only. Excess capacity revealed to exist in many organizations could also be optimally utilized to enhance efficiency. This can be achieved through proper planning and management of transport staff, subjecting the existing transport facilities and resources to income generating activities, and controlling the use (especially) of motor vehicles through proper justification of each trip.

It appears that the major problems affecting the transport systems of the non-profit organizations are managerial in nature. Ensuring proper planning, co-ordination, budgeting and evaluation procedures would be one way to improve transport efficiency. With commitment and good leadership skill, these issues could be resolved faster without directing substantial financial resources towards the transport operation.

In the long run however, the public institutions will require deviating from the traditional usage of the own account system where expenditures on maintenance and insurance consume large proportions of funds. This can be achieved through re-defining of policies so that the respective organizations concentrate only on their primary missions and to leave out transport matters entirely to an outside firm. The research found out that this has succeeded well with the print media companies and some banking institutions.

5.2 Policy Recommendations

Based on the empirical findings, the study recommends among others that

- i) Organizations need to carryout a thorough evaluation and appraisal of all the possible transport systems before deciding to use one.
- ii) Organizations require to distinguish between services that can be provided efficiently by own vehicles and those that can be done well by engaging outside transport
- iii) Organizations should have operational (effective) policy on disposal of uneconomical vehicles. This would serve to cut on maintenance and insurance costs
- iv) Organizations should justify the number of vehicles owned and secure insurance for running vehicles only.
- v) Organizations that use own account system should have a clear procedure of maintenance that ensures control on expenditure. Dealer oriented maintenance should be avoided as much as possible.
- vi) To cut or control fuel costs, the study recommends that organizations should have Speedo cables in all the vehicles under their possession. This would help to monitor mileage and actual fuel consumption. Use of credit cards at fueling points is highly recommended to reduce dishonesty.
- vii) The person in-charge of transport should have good education, good communication abilities and relevant qualifications. This would assist in choosing the type of transport system to use and in managing the system chosen.

- viii) The organizations should employ only properly trained drivers and/or mechanics, if high level efficiency in transport is to be achieved. Re-training of such staff is therefore imperative to enable them fit well in the ever-changing environment.
- ix) The organizations need to properly justify the numbers and categories of their transport staff. Such justification would enable for the retention of only required staff who should be utilized effectively.
- x) The excess capacity in-terms of transport resources (facilities and personnel) should be utilized in income - generating activities, to increase returns to factor inputs and economies of scale.
- xi) Factors that would motivate transport staff should be keenly observed to improve the honesty, integrity and level of cooperation of the transport staff, especially the drivers. Organizations need to re-examine driver allowances among other benefits.
- xii) Non- profit organisations should look at the transport sections as revenue centers as opposed to the traditional cost centers. This would require that any use of transport facility is quantified and the user informed accordingly, about the cost implication. Where possible the transport users should prove monetarily that the transport cost is recoverable from such usage. A strict rule on payment is highly recommended.
- xiii) It is high time organisations should concentrate on their primary missions and leave the transport issues to outside firms.

5.3 Recommendations for further research

Although this study attempted to analyze efficiency factors in organizational transport systems, more in-depth studies should be carried out with a view to strengthen these findings. Further research should be undertaken in the areas of

- i) Transport staff management and its impact on transport service delivery,
- ii) Institutional vehicle maintenance Vs dealer maintenance
- iii) A comparative analysis of the working conditions of drivers in profit and non-profit making organizations.
- iv) Gender effect in the management of transport systems on organizations among others

“A comparative analysis of the efficiency levels of transport fleet management systems in Kenya.”

QUESTIONNAIRE

The objective of this study is to analyze the factors that affect efficiency in transport fleet management systems in Kenya. The questionnaire is intended to collect the necessary data that will assist in the analysis.

Since transport plays a significant role in the operations of all organizations, the study is important because it seeks to establish policies that would result into cost effective transport management systems which would improve efficiency in the operations of organizations.

The success of this exercise substantially depends on your cooperation, which is called upon and highly appreciated in advance.

Information collected from this questionnaire will be treated strictly for this academic research.

Interview date -----

Organization name (optional)-----

Position of respondent-----

1.0 Background information (please tick as appropriate)

1.1 What is the mission / goal of your organization?

- Profit making
- Non profit making

1.2 Do you have a transport department / section?

- Yes
- No

1.3 what is the title/position of the person in charge of your transport department?

- Transport manager
- Transport officer
- Garage foreman
- Transport clerk
- Any other title (state) -----

1.4 Are you the person in-charge of transport in your organization?

- Yes
- No

1.5. (If yes in 1.4) please indicate your educational/ professional qualification

a) Educational

- Primary
- Secondary
- Graduate
- Other (specify) -----

b) Professional

- certificate in mechanical engineering
- motor vehicle technician certificate
- management certificate
- Government trade test
- None
- Other (specify) -----

1.6 Indicate in order of importance your major duties and responsibilities as the in-charge (boss) of transport

1. -----
2. -----
3. -----
4. -----

1.7 What is the level of the transport department in your organization structure? (From top management)

- 1st level
- 2nd level
- 3rd level
- >3rd level

1.8 a) Do you have mandatory services, which you must provide on regular basis?

- Yes
- No

b) If yes list in order of significance

1.9.1 Which transport type do you require for the services listed above?

- Lorries
- Buses
- Minibuses
- Saloon cars
- Tractors
- Other (specify)-----

1.9.2 How do you satisfy these transport needs?

- Use own vehicles
- Hire outside transport
- Use lease contracts
- Other (specify)

2.0 Transport staff

2.1 How many staff do you have in your transport department/section? Indicate number in the table.

Staff	Number
Drivers	
Mechanics	
Clerks	
Others (specify) -----	

2.2 What is the average monthly earning of your transport staff in Kshs?

Staff	Average Monthly salary
Drivers	
Mechanics	
Clerks	
Others (specify) -----	

2.3 a) Are there any allowance given to your staff when they go out on official safari?

- Yes
- No

b) If yes what is the average allowance per trip, per day?

Staff	Average allowance
Drivers	
Mechanics	
Clerks	

2.4 What is the average number of trips per month? -----

2.5 How many transport staff go on each trip? -----

Staff	Number
Drivers	
Mechanics	
Other (specify) -----	

2.6 What is the gender distribution among your transport staff?

	Number of			
Sex	Drivers	Mechanics	Clerks	Other
Male				
Female				

2.7 What is the average age of your drivers?

Average age	number
Below 35years	
Between 35 – 45 years	
Between 46 – 55 years	
Over 55 years	

2.8 Indicate the educational and professional qualifications of your drivers

a) Educational

- Primary
- Secondary
- Post secondary

b) Professional

- Driving license
- Government trade test
- Mechanical engineering certificate
- Motor vehicle technician certificate
- Other (specify)-----

2.9 How frequent do you take your drivers for re-training/ re-fresher courses/ seminars?

- Once every year
- Twice every year
- Thrice every year
- Only when need arises
- Not at all

2.9.1 How much do you spend on training and developing your transport staff annually?

2.9.2 Indicate the average number of years of experience of your drivers

- Less than 5 years
- 5 years
- 5-10 years
- 10-20 years
- Greater than 20 years

2.9.3 What other benefits do you give to your transport staff other than salary and trip allowance?

1. -----
2. -----
3. -----
4. -----

3.0 Vehicles

3.1 How many vehicles does your organization have? -----

3.2 What is the average age of your vehicles? Please insert number

- Less than 2year old -----
- 2-5years old -----
- 6-10years old-----
- Over 10years-----

3.3 After how long do you dispose of or replace your vehicles?

- After 5years
- After 10 years
- Arbitrary

3.4 Who frequently maintain your vehicles?

- own mechanics
- dealers
- jua kali artisans
- other (specify)-----

3.5 Do you have a schedule of inspection and maintenance of your vehicles?

- Yes
- No

3.6 If yes, what is the schedule based on? Tick the most predominant.

- Routine period
- Mileage
- Driver reports
- Age of vehicle
- Other, specify -----

3.7 What is the normal state of your maintenance service?

- Poor
- Good
- Very good

3.8 What is your average costs per annum? Please fill the table below.

Item	Annual average (Kshs.)
Maintenance	
Fuel	
Staff	
Hiring from outside	
Insurance	
Other (specify)	

4.0 Other modes of transport

4.1 Do you provide or arrange for other modes of transport for your organization?

- Yes
- No

4.2 If yes, which modes of transport do you use more frequently?

- Railway
- Air
- Water
- Other (specify)-----

4.3 What is the average spending on these modes of transport?

Mode of transport	Average spending per annum
Railway	
Air	
Water	
Other (specify) -----	

5.0 Problems experienced by the transport department/section

5.1 What problems do you encounter with regard to maintenance?

5.2 What problems do you encounter with regard to transport staff management?

5.3 What problems do you encounter with regard to your transport users?

5.4 What problems do you encounter with regard to top management?

5.6 Do you have any comments you would wish to make on your transport management system, which this questionnaire has not captured?

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