

PREPARING BUS AND TAXI OPERATORS FOR TENDERING IN THE WESTERN CAPE

J JAKOET



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Study leader

Prof. C J Bester Pr. Eng, D. Eng

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DECLARATION

I, the undersigned, hereby declare that this thesis is my own original work and has not previously been submitted in its entirety or in part at any university for a degree.

Jamiela Jakoet

SYNOPSIS

In an attempt to improve the efficiency of the transport system, the national government has instituted a new tender system for public transport contracts. Small bus and taxi operators are unfamiliar with operating in the formal sector. This study focuses on the extent of their disadvantage in the current tender system and recommends measures to counterbalance this.

A questionnaire was devised to determine how much assistance these operators would require to prepare them for the tender, using the model bus tender document as a basis for this. The response rate was 20% with 14 taxi and 17 bus questionnaires being retrieved for analysis.

The results showed that 10% of operators had no knowledge of the tender and many needed training in basic accounting and business procedures as well as public transport operation skills.

Recommendations included institutional changes in public transport funding, management and allocation of resources as well as the type of education and training required.

These changes should be implemented soon enough to ensure that small, medium and micro enterprises (SMME) operators are well prepared for the new tender system.

SAMEVATTING

In 'n poging om die effektiwiteit van die vervoersisteen te verbeter, het die nasionale regering 'n tendersisteen vir openbare vervoerkontrakte ingestel. Klein bus en taxi-operateurs is nie bekend met die bedryf van 'n besigheid in die formele sektor nie. Hierdie studie konsentreer op hul agterstand in die huidige tendersisteen en maak aanbevelings oor hoe dit oorkom kan word.

'n Vraelys is opgestel om te bepaal hoeveel bystand hierdie operateurs sal benodig om hulle voor te berei vir die tender. Die model bus tenderdokument is as basis gebruik. 20% van die operateurs het op die vraelys gereageer – 14 taxi- en 17 busvraelyste is ontvang vir verder verwerking.

Die resultate van die opname het getoon dat 10% van die operateurs geen kennis van die tender gehad het nie en dat baie van hulle opleiding benodig in basiese rekeninkundige en besigheidsprosedures sowel as openbare vervoer bedryfsmetodes.

Aanbevelings van die studie sluit in institusionele veranderinge in openbare vervoerbefondsing, bestuur en die toewysing van hulpbronne asook die tipe onderrig en opleiding wat benodig word.

Hierdie veranderinge behoort so gou as moontlik geïmplementeer te word sodat klein, medium en mikro operateurs goed voorberei kan word vir die nuwe tendersisteen.

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NOMENCLATURE

Bus Types:

Articulated – a bus with capacity between 102 and 184 persons. This is also called a train bus, consisting of two sections to form a unit. It can swivel horizontally at the connection between the two sections and has a continuous passage over its length

Double-decker – a bus that has capacity between 80 and 110 persons and consists of two decks connected to form a unit.

Standard – a bus with capacity between 58 and 101 persons

Medium – a bus with capacity between 36 and 57 persons

Midi – a bus with capacity between 17 and 35 persons

Mini – a bus with capacity between 10 and 16 persons

Rebuilt – See Appendix A-I:

Rehabilitated – See Appendix A-II:

CMC – Cape Metropolitan Council

DOT – Department of Transport

Incumbent operator – Operator allowed to operate subsidised bus routes on the open permit system before the establishment of an open tender system.

NDOT – National Department of Transport

PAWC – Provincial Administration: Western Cape

SABOA – South African Bus Operators Association

SABTACO – South African Black Technical & Allied Careers Organisation

SACRO – South African Companies Registrar Office

SMME – Small, medium and micro enterprises.

WCTC – Western Cape Taxi Council

1 INTRODUCTION

1.1 Background to the study:

For a number of years, the bus industry in the Western Cape and South Africa as a whole has been operating inefficiently. The situation has resulted from the nature of policies employed by the Department of Transport, which allowed large operators to operate a public transport service in the absence of proper monitoring of the level of the service provided. Also competition was not encouraged, which resulted in high fares as well as no incentives to improve the levels of service for transport commuters. As a result, the system deteriorated and commuter numbers decreased proportionally.

The incumbent operator for the Western Cape region is Golden Arrow. Golden Arrow first operated as Tramway Holdings, which was founded in 1861. The incumbent operator was previously subsidised according to the number of multi-journey tickets sold. The government wished to improve efficiency and implement a more efficient system of subsidy provision, taking into account the number of revenue kilometres operated by the operator.

The government wishes to enable a modal split of 80% to public transport and 20% to motorists. In order to achieve this target, a number of changes need to be implemented, not the least of which is an improvement of the efficiency of public transport operation as a whole.

In 1988 a new policy was introduced to improve this situation. Buses were required to operate at a minimum of half seat loads and operators were to be paid according to the revenue kilometres travelled (NDOT ; 1996).

Since efficient monitoring services were not in operation, these policies could not be properly implemented.

The NDOT adopted the policy to "...improve South Africa's competitiveness and that of its transport infrastructure and operations through greater effectiveness and efficiency..." (NDOT ; 1996). To encourage competitiveness and greater efficiency of the system, private bus operators would need to be introduced into the subsidy scheme, currently only enjoyed by the incumbent operator.

In an attempt to attract smaller operators for tendered services, a new tender system was to be developed for each province. On 1 April 1997 (CMC ; 1999) all subsidised bus services were changed to interim contracts in anticipation of the new tender system. These contracts were valid for three years and would culminate in the implementation of the new tender system.

The National Department of Transport has taken the initiative to implement an open public tender system. This will open up the market to smaller transport companies, previously unable to operate a subsidised commuter service. The National Transport Authorities take care of the design of the actual routes and draw up tender documents as well. These tender routes are advertised to the public to inform interested operators of the tender.

Operators are allowed to collect tender documents and are charged a certain fee for this privilege. They are then given an opportunity to formulate their tender bids by complying with the conditions of the tender document. Bids are then collected and evaluated on the basis of total cost as well as a number of other quality criteria. The successful tenderer is awarded the contract and a Supervisory and Monitoring Firm, which is appointed by the Transport Authority to manage the contract, monitor the operator's service.

As a rule, the incumbent operator has the first right of refusal and will be allowed to match the lowest bid if it is less than 10% lower than its own bid. If an operator other than the incumbent is eligible for the tender, it will only be awarded if the operator is proven to be able to fulfil the regulations as stated in the tender document. The successful operator should also have a bus fleet to provide an adequate service and have provided sufficiently for repairs and replacement of vehicles in the pricing of the tender bid.

The due date for the completion of these tenders was July 2000, but this has since been amended due mainly to unforeseen circumstances. This delay could be linked to the recent eruption of violence between transport operators in the Western Cape Province (Kingma, R. ; 2000). According to the CMC, this situation has stabilised and plans for the tender are underway. Tenders were due to be advertised by October 2000 (Kingma, R. ; 2000). At the time of submission of the first draft of this thesis (January 2000) there has been no definite indication of when the first tenders would be advertised and the open tender system set in motion.

1.2 Objectives of study

Private transport operators have never been exposed to the type of tender envisioned by government. Whilst government has provided certain courses for interested tenderers to attend, this cannot be the extent of the assistance offered.

Many operators have minimal experience with good business practice or managing a contract of this magnitude. In lieu of the strict penalties for inadequate service by the operator, these operators should be well prepared before undertaking to prepare a tender bid.

This study is aimed at addressing the foreseeable problems that tenderers would face in preparing for such a bid.

1.3 Objectives of Thesis

The aim of this thesis is to identify the problems that tenderers specifically in the Western Cape would be likely to encounter when preparing a bid. These problems should be identified and their degree ascertained by means of a survey of public transport operators in this region.

In order to achieve this, the main objectives recognised are:

- 1 Identifying deficiencies in knowledge of operating methods of public transport.
- 2 Identifying inadequacies in levels of education and skill required by the position to be fulfilled by operators and their employees.
- 3 Identifying the possible training requirements of operators as well as employees.
- 4 Recognising levels of familiarity with financial procedures relevant to operating a contract.
- 5 Identifying compliance with other specific requirements of the tender contract.

The analysis of these will culminate in the provision of recommendations to inform and enrich the new tender system by means of realistic solutions to the perceived problems.

1.4 Scope of Thesis

The scope of this thesis is to identify the problems that would prevent private bus and minibus taxi operators in the Western Cape from effectively participating in the tendering of bus routes.

Recommendations will be made to target these problems making use of a survey as well as experience of this type of problem on a global scale.

1.5 Plan of Development

The plan is to devise an appropriate survey procedure to obtain the information required by the study. This should enable an assessment of the current state of preparedness of private public transport operators in preparing for the new tender system. Global experience on the tendering problem will be used, in conjunction with the survey results, to formulate plans for the restructuring of the tendering system, taking this new information into account.

1.6 Summary

National government wished to improve the efficiency of the transport system by implementing a public tender of subsidised contracts previously operated exclusively by Golden Arrow.

The new system incorporates a subsidy policy based on the revenue kilometres travelled by an operator and buses are required to operate at a minimum of half seat loads.

Even though SMME operators will be allowed to tender for subsidised contracts for the first time, they are at a disadvantage to the incumbent operator.

The aim of this study is to identify the degree of this disadvantage and recommend measures to improve this situation.

1.7 References

Kingma, R. ; 2000 ; Meeting with Ron Kingma, 11th floor, Cape Metropolitan Council.

NDOT ; 1996 ; White Paper on National Transport Policy; South Africa.

The National Land Transport Transition Bill, 1999.South Africa.

CMC ; 1999 ; Moving Ahead: Cape Metropolitan Transport Plan, Part 2: Public Transport Strategic Component, Discussion document.

2 LITERATURE REVIEW

2.1 Introduction

This chapter will focus primarily on important information for the study taken from various sources of literature. The section on Government Transport Policy deals with official government publications and their relevance to the subject being investigated. The Western Cape Transport Situation deals with literature on transport information that is relevant to the Western Cape in particular, while the section on Experiences in Tendering examines literature on good tendering practice from a number of different cities and countries throughout the world.

It is the opinion of the researcher that this will provide a good overview for the detailed investigation of the topic under consideration.

2.2 Government Transport Policy

The views of government on issues relating to public transport policy are laid out in its official documents. The Moving South Africa (MSA) as well as the White Paper on Transport provides an overview on the problems in the existing transport system and the goals future initiatives should seek to satisfy.

A number of ancillary documents will also be studied, which are more focused on how to meet these objectives set out by government.

2.2.1 The White Paper on National Transport Policy

An important goal of national government outlined in this document is

“to improve South Africa’s competitiveness and that of its transport infrastructure and operations through greater effectiveness and efficiency to better meet the needs of different customer groups, both locally and globally.”

The new tender system encourages competition in transport operations since it allows for an “open” tender of subsidised bus routes and seeks to incorporate smaller operators into the

market. The new system also incorporates measures to improve the efficiency of the service provided.

The national government is interested in implementing the principles of the RDP program. An aim of the white paper is

“to support the goals of the Reconstruction and Development Programme for meeting basic needs, growing the economy, developing human resources, and democratising decision making.”

Under the new system, operators are required to submit an RDP proposal with their tenders outlining the methods they will use to implement the goals of this programme. Supervisory and monitoring firms will see how well they are adhering to their proposed objectives.

Human resources should be developed through the education and training of transport operators.

2.2.2 MSA: The Action Agenda

“In addition to meeting the needs of customers and the nation, MSA has emphasised the need for service to be continuously upgraded.”

Services should be upgraded continuously through improvements in the quality of the transport system. The tender system should also be improved to ensure that it meets the needs of operators and commuters as well as the goals of government.

2.2.3 The National Land Transport Transition Bill, 1999

“Public Transport should be developed taking national and international benchmarks and best practice into account.”

This will ensure that public transport information is shared to provide for strategic improvements to the functioning of the system.

2.2.3.1.1 "Funding of Public Transport by national government must be efficient, cost effective, equitable and transparent."

Equity and transparency will ensure fairness and build trust with public transport operators.

This information was obtained from the National and Provincial transport plans issued by the DOT and the CMC as well as the strategic framework for implementation. Nationally, the information was obtained from the Department of Transport and local information from the Cape Metropolitan Council.

2.3 The Western Cape Transport Situation

2.3.1 Transport Statistics

In 1992, the average age of commuter buses in South Africa was 10.7 years (South African Bus Operators Association ; 2000). This average rose to 12.7 years in 1996.

In 1992, the average ages of minibuses and cars were 8.0 years and 9.6 years respectively. No comparative statistics for minibus taxis and cars were available for 1996.

From the trend observed in the average ages of commuter buses between 1992 and 1996, it would appear that the average age of buses is increasing. This could be attributed to improvements in the endurance characteristics of these vehicles or a change in the behaviour of bus operators with regard to vehicle replacement.

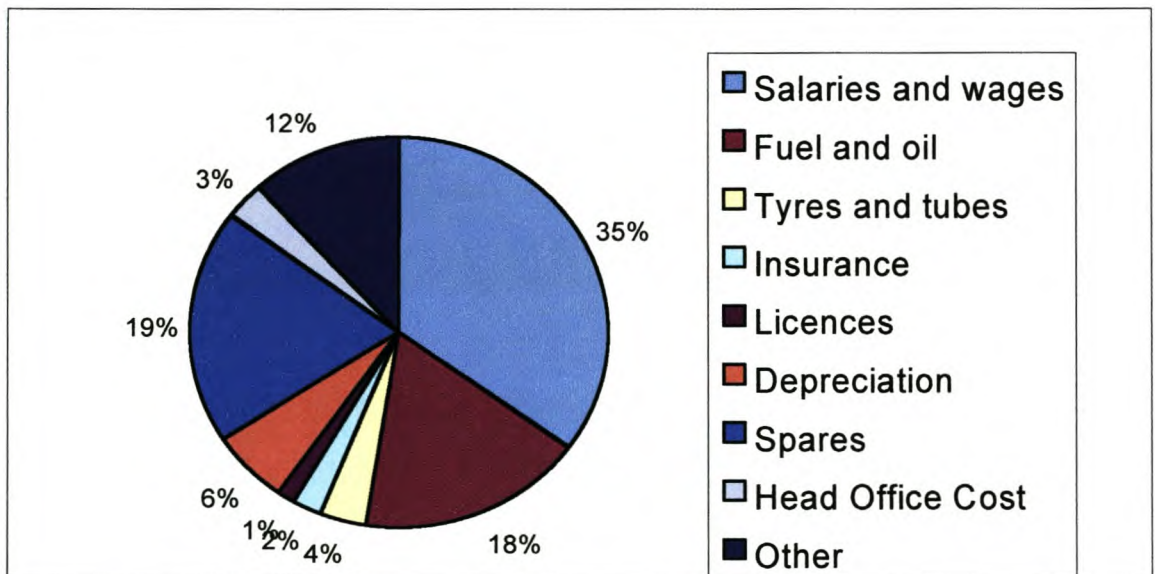


Figure 2.1: SABOA Industry Cost Profile

The pie chart in **Figure 2.1** represents the Industry Cost Profile for bus operators belonging to SABOA. Fuel & oil account for 17.5% of the total costs for bus operators. This is second only to the percentage allocated to salaries and wages of 34.9%.

Information gathered from Golden Arrow Bus Services web site (Golden Arrow Bus Services ; 2000) indicates that the fuel cost increase from January 2000 to October 2000 stands at 44.7%.

“While Golden Arrow is aware of the negative effects of fares increases on our passengers, the company has no choice but to pass on the increased cost of fuel at this stage.” (Golden Arrow Bus Services ; 2000)

Not only does this fuel cost increase adversely affect the profit margin of bus operators, but transport users suffer as well in the form of fares increases due to the high fuel prices. This could present a problem for smaller bus companies, especially when trying to venture into the, as yet foreign, commuter subsidy market.

“In the industry, a “small operator” is known as someone who operates a fleet of less than 30 buses. If applied to SABOA’s membership profile, 80.7% of its membership fall within this definition.” (South African Bus Operators Association ; 2000)

Percent of members	Number of buses
54	1 – 5
13.5	6 – 10
5.3	11 – 15
2.6	16 – 20
3.3	21 – 25
2.0	26 – 30
19.3	over 30

Source: SABOA, 2000

Table 2.1: SABOA Membership Profile

Source: SABOA, 2000

Table 2.1 represents the membership profile of SABOA. 54% of SABOA members have between 1 and 5 buses. Bus operators that do not belong to SABOA in the Western Cape

represent a small percentage of the total number of operators (Maluka, G. ; 1999). For this reason, the statistics for SABOA membership can be considered a fair indication of the true situation for all bus operators if the effect of non-SABOA members on this statistic can be considered to be negligible. The statistics in Table 2.1 refers to the whole of South Africa and may differ from the actual situation in the Western Cape.

A study by the Development Bank of South Africa was conducted to calculate average fleet ages for public transport operators in South Africa (de Saint Laurent, B. ; 1998). These ages were calculated using statistical information for the year 1997.

For scheduled bus fleets, the average fleet age was found to be 12 years. This value is similar to the value of 12.7 years obtained in the 1996 study conducted by SABOA using their members as a sample (South African Bus Operators Association ; 2000).

The difference of 0.7 years could either be due to the differences in the characteristics of the samples taken or a reflection of the characteristic differences between SABOA members and bus operators in general.

The average fleet age of minibus taxi operators was found to be 9 years (de Saint Laurent, B. ; 1998). When comparing this estimate with the average taxi age of 8.0 years in 1992 (South African Bus Operators Association ; 2000), it would appear that the average fleet age is increasing. There could also be a large difference between the average age of minibus taxi fleets of SABOA members that primarily operate bus fleets and those of minibus taxi operators in general.

Another possible cause for the increase in average fleet age between 1992 and 1997 could be the increased use of minibus taxis as a mode of public transport. To maximise the profit obtained, taxi operators would tend to try to get the maximum use out of their vehicles. This would result in longer replacement periods of vehicles and hence an increase in vehicle ages.

2.4 Scope for Public Transport

There is “a lack of low-cost and well prepared field tests, a necessary path when social or institutional aspects are strategic for success.” (de Saint Laurent, B. ; 1998)

Developing low-cost, efficient surveys can compensate for the lack of development capital. The use of more surveys in this manner will allow authorities to conduct extensive research and be able to improve the transport system at a lower cost. Collecting representative information is important. The better these surveys are designed, the more accurate the result will be. This will give decision-makers the tools to make informed decisions that will benefit all parties concerned.

“There is scope for improving both the performance and productivity of almost every aspect of transportation through organisation and management.” (Spence, M.N. ; 1998)

The use of low-cost field tests is just one initiative of this type that could be used to benefit transport decision-making. Further research into techniques of this type will ensure that funding is efficiently utilised in the provision of transport projects.

“One of the aims of the tendered contract system is to empower small, medium and micro enterprises.”

“If the tendered contract system is implemented haphazardly, it will destroy public transport instead of promoting it.” (Golden Arrow Bus Services ; 2000)

Care should be taken to ensure that the tender system is not implemented haphazardly. The resultant consequences could be disastrous for transport operators, the transport authorities as well as the commuting public.

An important consideration is the welfare of the consumers of public transport. The new tender system should provide benefits for the service providers as well as the users of public transport.

A concerted effort should be made to “assess the discriminational effects of transport programmes.” (Spence, M.N. ; 1998)

The end benefits should be considered in the initial stages of planning a project. Benefits to each party concerned should be planned for using established principles of equity. These

'idealised' benefits can later be adjusted to optimise on cost-effectiveness and greater efficiency of the project.

Equity considerations should not be ignored in planning the distributional effects of an initiative of this nature. Transport programmes generally effect many different sectors of the community. The success or failure of an initiative could be due to a failure to quantify the benefits to the parties involved in the initial planning stages of a project.

Community involvement meetings and workshops is therefore an essential aspect of a successful transport initiative. It is important to ensure that the distributional effects are fair and equitable. Sufficient importance should be placed on using the principles of equity which are most suitable for the context in which it is being applied.

“use provincial monies, through the provision of services and subsidies, to benefit the poor.”

This initiative is consistent with the principle of equity relating to the provision of basic needs for all persons. The provision of subsidies and services should be planned to allow for the greater mobility of the most financially disadvantaged sectors of the population.

“Set transport prices at appropriate and realistic levels, consistent with the aims of restructuring and redistribution.”

The principles of the RDP are referred to in this insert. Transport policy should be aimed at uplifting disadvantaged persons and redistributing benefits in a more equitable manner amongst all transport users.

The issue of transport pricing raises the concern as to how this could fulfil RDP objectives set out by government. Using the basic need philosophy, this could refer to the services to and from less-affluent areas being more heavily subsidised than other services. A more extensive transport service could also be provided in poorer areas that would improve their mobility and allow them improved access to employment opportunities, public amenities, etc.

“Ensure that decision making is truly participative and democratic.”

All parties affected by the tender should be given the opportunity to participate in the planning in some capacity. Where certain parties involved feel that their needs are not being met, conflicts could arise. Fairness and equality should be maintained throughout the duration of the project. A system of monitoring and accountability would ensure that a system of fair dealing is encouraged.

2.5 Ideas for the Future

“Unpopular decisions will have to be made in the process of restructuring urban public transport. This will have to involve ownership, operational, financial and institutional decisions.” (Walters, J. ; 1998)

“South Africa also needs to institute institutional reform as about 60% of the subsidised bus fleet is either owned by the Provincial, Metropolitan or Local Governments.”

“Planning is done on behalf of the people. It is therefore important that the authority has the political support of the people in order for its strategies to succeed.”

“I believe that the Transport Authority and the service provider should share in the financial risk of the tender specifications and system revenues.”

“Risk sharing will ensure that the Transport Authority will change its method of contract management from an authoritarian service monitoring agency to one where quality of service is number one and work much closer with the operator to achieve the contract objectives.”

“The benchmarking of performance criteria as is found in performance related gross contract systems should preferably also be introduced in the net contract system.”

“A continuous programme of personnel training is important.”

2.6 Global Experience in Tender Practice

2.6.1 Experience in Tendering

The NDOT has set specific guidelines for tenderers to follow in the pursuit of a certain level of quality in terms of bus occupancies as well as standards set out in the operation of services. This approach does have merits, considering that service levels are poor and an effort should be made to raise these levels to an acceptable standard. Care should, however, be taken not to enforce these standards too rigidly without being clear about the best methods to achieve the goals of transport users and service providers. The European standards are set out in the QUATTRO report (European Commission ; 1998), which provides guidelines to good tendering practice. Quality management should be seen as a continuous search for better service and permanent progress in an organisation. Rigid levels of service are discouraged.

The European transport situation does not have the same problems with service quality as the Western Cape Province. The main concern is to implement a well-monitored service that follows a set of quality standards at present, whilst most European countries already have this system in place. Rigid quality standards used at present are useful in achieving short-term goals of getting the system set up. To ensure that these are not unreasonable or outdated, these quality benchmarks should continuously be updated using real time data.

Transport authorities should develop a working relationship, co-operative attitude, favouring innovativeness with operators. The provision for an alternative tender in the general rules does allow for some innovativeness. Operators are also allowed to alter a service with the permission of the employer. To ensure that this process is not compromised, a co-operative relationship should be encouraged by both parties.

The system should be used as a learning environment. Internal and external benchmarking should be used to provide innovative and implementable solutions to transport problems. External experience should be used to find the best solutions given the existing data.

2.6.2 Tender Evaluation

The publication of a clear and explicit evaluation scheme will send an important signal to the market as to the openness and fairness of the tender (European Commission ; 1998). This factor is important in the current tender system, where mistrust is an issue.

Tendering Authorities may define the minimum standards of quality in the tender document. The new tender system incorporates severe penalties for bad service, but does not offer rewards for good service.

It is recommended that pre-set quality criteria be used to evaluate bids by attributing a cash value to bids that announce quality goals in excess of the minimum standards. Good service should be rewarded and bad service penalised in cash terms. This provides the incentive for operators to be innovative and encourages a better service quality.

A number of methods are suggested to attribute value to quality:

- Each quality criteria is weighed as a percent of price of tender (usually amounts to 2.5 to 14% of price)
- Tender price is adjusted for each quality determinant that differs from the required level.
- Compensations promised to the operator are decreased if service levels do not match standards agreed to in the contract.
- Operator is given a reward depending on the rate of approval for his service using customer satisfaction surveys (usually 2 to 3% of contract price).

2.6.3 Technical Viability of Options

2.6.3.1 Introduction

A number of options are available to improve the viability of the tender and enable the process to be implemented smoothly, with minimal negative impacts. The options that related best to the South African and particularly Western Cape situation were summarized and are discussed below.

2.6.3.2 Cross-Subsidy Scheme

Poor services are subsidised by more-lucrative services. This method allows less-profitable services to be operated if necessary. A lower frequency of service is needed for less-lucrative

services. Cross-subsidisation tends to be anti-competitive and inefficient. This leads to poor service quality if efficiency incentives are not provided. This scheme is not viable if too few routes are operated per company.

2.6.3.3 Merge into Single (Large-scale) operator

This structure has potential benefits in terms of co-ordination and integration. In the absence of competition or profit-motivation, the single operator system will tend to be highly inefficient.

This is evident when looking at the current state of the bus industry in the Western Cape, where a single operator has contributed to the decline of public transport and the loss in market share to the private car.

2.6.3.4 Several Large Companies

There might be problems with integration and fares and services would have to be co-ordinated. Cross-subsidisation could be incorporated to fund less-profitable services. The threat of competition would result in efficiency benefits to the system.

There is little evidence that larger companies would be more efficient than smaller companies

2.6.3.5 Route Rotation

Private operators form associations of equal size. Routes are rotated weekly amongst associations, with each getting a turn at providing profitable and unprofitable services. Supervision would be required to ensure fairness and equality in the operation of this system.

2.6.3.6 Equal Division

Contracts are divided up to have profitable and unprofitable services in each contract. These contracts are tendered. It will require fairness in the number of profitable and unprofitable share for each contract.

2.6.3.7 Co-operative

This is a Korean institution that seems to work well with medium-sized cities. Co-operatives are groups of bus companies, which reduce costs by pooling their resources into common garages for storage and repairs. Many operating facilities are shared to reduce costs.

Ideally, each co-operative should have its own area of the city with a similar profitability profile. This is known as district co-operatives. Each should be small enough to allow operators to learn all of the routes operated.

Co-operatives are made up of a number of small, privately owned companies, which allows for greater efficiency.

Innovation by single operators is discouraged as fares and revenues are shared equally. Competition amongst operators is also discouraged. Dead mileage results from shifting crews, which contributes to 1.5 to 2% of the operating costs.

2.6.3.8 Revenue Pooling

Companies are allowed to operate separately, but pool revenues. This method is simpler than the co-operative since operators are allowed to operate their own routes and remain separate companies. There are fewer problems with integration.

Revenues are pooled and usually distributed by bus kilometres travelled where only bus companies take part. Where more than one mode is involved, the revenues are shared on the basis of the percent of revenue accruing to each company in the year prior to the introduction of the pooling system. Operators need to trust each other. This might evolve from a co-operative.

2.6.3.9 Competing/Overlapping Routes

To get a bigger share of the revenue, more buses are run. This results in a highly frequent service. There are shorter headways during peak hours. There is a low variable cost component due to the company structure. Benefits are therefore derived from making maximum use of the fleet.

2.6.3.10 Metropolitan Transit Authority (MTA)

The MTA determines the services to be provided. It also monitors demand, plans services, decides fares and markets the service to the public. Operator performance is closely monitored.

This transport system is used extensively in West Germany. Transit companies operate services, employ operating and maintenance staff, own assets (vehicles, depots, etc.), produce detailed time-tables, vehicle and crew duties and supervise operations.

2.7 Results Of Transport Studies

2.7.1.1 The Optimum Transport Industry Structure

Studies were undertaken (Won ; 1995) to determine the optimal structure for the transport industry. Fifteen transport officials and related officials were asked to provide ratings on the effects of alternative bus industry structures. All major structure types were considered in this investigation.

The results obtained were conclusive. It was advised that substantial mergers of bus companies should be avoided. Even though smaller companies suffered more financial difficulty, they are more efficient and profit-orientated.

The transport system should operate more effectively. To achieve this, companies should be better co-ordinated.

The formation of co-operatives should be encouraged. In particular, district co-operatives were found to be most feasible alternative. This system has worked successfully in two Korean cities, namely Daejeon and Gwangju.

2.7.1.2 Improving Efficiency of Bus Companies

A study was conducted (Matas, A., Raymond, J.L. ; 1998) using nine Spanish bus companies between 1985 and 1995. A number of variables were used to estimate the cost function. These included operating costs, labour price, revenue kilometres, kilometres of network, firm specific effects, time-specific effects and a random term.

It was found that larger companies were less productive than smaller companies. This was the general trend when government policies forced larger companies to expand services into lower density areas. Local authorities should evaluate the cost involved in the public service obligations they impose upon bus companies.

A negative correlation was observed between the average age of the fleet and relative efficiency.

The division of large monopolies into smaller companies leads to higher productivity. The strategy of putting different areas of the market up for tender should allow for a reduction in cost while maintaining passenger densities on the routes. This will be contingent on the system being truly competitive.

By adjusting fares to the marginal cost at any given time, the level of demand will be optimised. Private transport costs should also be fixed at the marginal cost by pricing vehicle-operating costs appropriately. In the researcher's opinion, this can be achieved by providing concessions for public transport vehicles, while raising the prices of fuel, tyres, parking, etc for private car users. If the private transport cost is lower than marginal cost, these suggested price increases would lower car usage and raise the market share held by public transport. Lower than marginal cost for the private transport usually results in the overuse of cars and congestion. Increase in private car usage results in a decrease in the use of public transport and hence an increase in costs for bus companies.

An efficient pricing policy for bus services (using marginal costs) would result in increased productivity. This will be evident in a reduction in peak period demand, improved commercial speeds and optimised routing of lines around the city.

The reduction of competition between modes in the market results in a considerable reduction in operating costs (Mackie P., Preston J., Nash, C. ; 1995).

2.7.1.3 Benefits of Using Life Cycle Costing System

Life Cycle Costing is an explicit method for evaluating the total cost of an asset over its whole life. This method was used (Hide H., Madrus, T., Jang, K. ; 1990) to determine the benefits accruing to bus companies in Toronto, Canada when using this costing system on their fleet.

This system takes all operating costs into account over the lifetime of a vehicle. This enables bus operators to determine when it is more economical to rehabilitate, rebuild or replace a vehicle.

Costs in US dollars were used to represent penalties accruing to operators as a result of non-optimum management and operational decisions. These penalties could be avoided by using the Life Cycle Costing (LCC) system.

The penalties were as follows:

Unsuitable Vehicle Type	\$7000
Premature Retirement	\$4000
Inadequate Refurbishing Program	\$1000
Failure to replace old model	\$4000

The LCC system has the following benefits:

1. Improves efficiency of fleet purchasing and operating strategies
2. Provides direct cost comparisons between performance of individual vehicles and vehicle types.
3. Compares the cost per unit distance travelled
4. Assesses variations in vehicle availability
5. Calculates fleet size for a particular operation
6. Calculates revenue earning capacity
7. Uses vehicle performance on unit operating costs to determine the optimum economic life for vehicles.
8. Identifies the most cost-effective vehicle to be purchased for any type of particular operation.
9. Individual vehicles within the fleet are monitored to control cost components such as fuel or brakes.

2.8 Summary

Equability and transparency of public transport funding is encouraged by national government. The service offered should be continuously upgraded and public transport developed taking national and international benchmarks and best practice into account.

The average age of buses is increasing. While the average fleet age of buses is decreasing (between 1996 and 1997), the average fleet age for taxis is increasing (from 1992 to 1998).

Fuel and oil makes up a large proportion of the costs for SMME bus operators.

Decision-making should be truly participative and democratic. A continuous programme of personnel training is important. The efficiency of the system should be maximised, while ensuring that fairness and equity is maintained amongst all parties involved. Co-operation and innovation between the government and service providers should be encouraged.

The formation of co-operatives should be encouraged as this industry structure maximises the efficiency of the transport system.

2.9 References

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3 NEW CONTRACT SYSTEM

3.1 Overview of Tender Process

The contracts for the first phase of services are advertised in local and national newspapers, on community notice boards and the relevant organisations are informed (Provincial Administration of the Western Cape ; 2000). For the first phase of tenders SABOA and the Western Cape Taxi Council would be amongst the organisations informed.

The Provincial Department of Transport issues tender documents to operators on payment of the tender deposits (Transnomics cc ; 2000).

A site meeting is arranged and all prospective tenderers invited to attend. They are given a tour of the service area and briefed on the services being tendered and important contract conditions (Provincial Administration of the Western Cape ; 2000). The minutes of the site meeting as well as questions raised are added as addenda to the tender document.

Tenderers are given ~6 weeks to complete and submit tender forms. The evaluation of tenders takes ~2 months. Tenders will be evaluated according to:

1. Their tendered rates
2. Financial viability
3. Ability to provide suretyship
4. Condition and number of vehicles
5. Ability to fulfil technical & operational requirements
6. Previous operating experience
7. Managerial structure and suitability
8. Their level of compliance with RDP objectives (Transnomics cc, January 2000)

The successful tenderer is given ~8 weeks to prepare for operation of the tendered service.

A monitoring firm is appointed to manage the contract and to ensure that the operator complies with specifications.

Successful tenderers are given 14 days to obtain the necessary suretyship for the contract. Suretyship is 4% of the tendered value.

3.2 Contractual Arrangements

The successful tenderer enters into a contract with the employer. 10-50% of the services should be sub-contracted for any given month. The sub-contractor has no contract with the Employer. As a result, the operator is liable for any penalties incurred by the sub-contractor.

Data for passenger counts, route details, timetables, required vehicle specifications, number of multi-journey tickets sold, number of scholars, etc. are available to tenderers as a result of CMC surveys on proposed routes. The Employer due to inaccuracy and changes in demand does not guarantee this information.

Operators will be penalised by failure to meet the requirements of the tender. These include inefficient operation of service, poor quality, deviation from routes and timetables, failure to implement RDP proposals outlined in the tender forms, etc.

The vehicle fleet should undergo a roadworthy test every 6 months as well as 2 weeks before the commencement of services.

The operator should provide public liability insurance at his own expense.

Only trips carrying more than 35 passengers, as well as less than 50% scholars will qualify for a subsidy. Trips carrying more than 50% scholars will be regarded as a scholar trip and will be subsidised accordingly.

In the case of:

1. Traffic obstruction,
2. Adverse weather conditions
3. Threat of serious violence or
4. General strike action,

operators will be paid for standing kilometres if they cannot operate their service. Standing kilometres amount to 60% of the tendered rate agreed upon.

3.3 Summary

Tenders will be advertised on community notice boards and in national and selected other newspapers. Relevant organisations will also be informed of the tender. Tenderers collect their documents, attend a site meeting and are given a period of about six weeks to submit their tender proposal.

Tenders are evaluated according to previous experience, suitability of vehicle fleet, suretyship, RDP objectives, etc. The most suitable tender is awarded the contract. The incumbent operator is given the option of matching this offer if it lies within 10% of the incumbent operator's bid price. The operator is given time to prepare for the service as well as produce the required suretyship.

The successful tenderer enters into a contract with the employer. Although he/she is required to subcontract 10 – 50% of the contract, no contract is binding between subcontractors and the employer. A supervisory and monitoring firm will ensure that the standard of service is maintained by penalising poor performance by the operator.

3.4 References

Provincial Administration of the Western Cape ; 2000 ; First Phase Bus Tendered Contracts for the Cape Metropolitan Area: Report on Community Meetings to introduce The Bus Contract System & obtain feedback ; Department of Economic Affairs, Agricultural & Tourism: Transport Branch, ; Western Cape.

Transnomics cc ; 2000 ; Design of First Phase of Tendered Bus Contracts in the CMC Area, Introduction to Contract Design, Consultant's Notes.

4 MODEL TENDER DOCUMENT

4.1 Introduction

The model bus operations tender document (Provincial Administration of the Western Cape ; 1999) will be used as a basis for drafting the questionnaire to be used in the survey. Since this document forms the basis of the actual tender documents being developed for use in the tender, the ideas contained in this document will provide an understanding of the duties and requirements expected from the prospective tenderer. This information is of vital importance to realising the aims & objectives of this study.

The model bus operations tender document consists of the following sections (listed in sequential order):

1. TENDER RULES
2. GENERAL CONDITIONS OF CONTRACT
3. SPECIAL CONDITIONS OF CONTRACT
4. SPECIFICATIONS
5. TENDER FORMS

In drawing up the tender documents, sections 1 & 2 (Tender Rules & General Conditions of Contract) cannot be changed at all. The Province is allowed to make changes to sections 3, 4 & 5 (Special Conditions of Contract, Specifications and Tender Forms) of the model document.

4.2 Tender Rules

4.2.1 General

- Notices inviting tenders will be published in the Provincial Tender Bulletin
- Upon Collection of tender documents by a prospective tenderer, a charge will be levied
- These tender rules and instructions given in the official tender notice shall be binding upon all tenderers
- Foreign tenderers should appoint an agent in the RSA
- The period of validity of the tender is indicated in the tender notice
- The tenderer should apply for and receive permission to tender for a route from the Local Road Transportation Board (LRTB) before submitting a tender

- The tenderer will not be allowed to oppose applications made by the successful tenderer to the LRTB to provide the services to which the tender relates

4.2.2 Inspection Of Service Area

- The accuracy of information provided relating to services to be provided
- The tenderer or representative of the tenderer is required to attend a service area inspection and tender meeting

4.2.3 Data And Statistics

- The employer does not guarantee the accuracy of information provided relating to services tendered

4.2.4 Information

- If the information submitted by the tenderer is incomplete, he/she will be given 14 days to provide this information
- The cost for this information should be allowed for in the tender rates submitted
- All tenderers should provide estimates for income and expenditure for the first year of the contract period for evaluation purposes
- Tenderers should submit their proposed management structure to manage the contract and information regarding which staff categories would be full and part time

4.2.5 Tender Cost

- Tenderers will receive no compensation in terms of costs or losses incurred in preparation for the tender

4.2.6 Tender All-Inclusive

- Rates stated in the Schedule of Quantities shall be binding on the tenderer
- The tenderer should allow for full compensation for all costs necessary for the execution of the contract in the tender

- The tenderer shall allow in the tender for increases and decreases in scheduled kilometres
- Only 85% of the operator's income is subject to escalation (increases in VAT are also allowed for in the escalation formula)
- The successful tenderer shall be required to make two instalments of 0.375% each of the actual contract value 14 days after the first and second year of operation

4.2.7 Alternative Tenders

- Alternative tenders should comply with the same requirements for the tender documents
- Proposals involving modifications of the services should be notified in confidence to the Employer at least 14 days before the closing date of tenders

4.2.8 Combining Tenders

- Any reduced rates by combining two or more tender contracts must be specified in the Schedule of Quantities

4.2.9 Completion Of Tender Forms

- All sheets submitted should be completed, signed and witnessed as indicated
- Rates given in the Schedule of Quantities shall be used to calculate the suretyship required for the contract

4.2.10 Evaluation

- The Employer has the right to evaluate the tendering person or company in terms of ability to perform the contract
- The Employer may evaluate the tenderer's premises and facilities that will be used to provide the service
- The Employer may appoint a firm of consultants to report on financial resources of any tenderer or any other relevant aspect of the contract

4.2.11 Evaluation Criteria

- Qualifying Criteria
- Completion of tender forms
- Correctness of tenders
- Financial Criteria
- Cost of tender
- Suretyships
- Financial sustainability
- Bus ownership/financing
- Operational Criteria
- Previous operational record
- Electronic equipment
- Vehicle profile and depots
- Services and maintenance schedule
- Additional/spare bus capacity
- Developmental Criteria
- Adherence to government policies relating to reconstruction and development
- Community involvement
- Affirmative action
- Joint ventures with small businesses or previously disadvantaged individuals

4.2.12 Tender Acceptance

- Once the Employer has advised a tenderer in writing of the acceptance of his tender, the contract, as defined in the General Conditions, will come into being.
- The tenderer will henceforth be referred to as “the Operator”

4.2.13 Qualification Criteria

Tenderers need to comply with the following:

- Operate on business principles with financial ring-fencing
- Have no unfair access to financial resources
- Be a registered taxpayer and have their tax affairs in order

4.3 General Conditions of Contract

4.3.1 Access And Disclosure

- The Operator will assist in the inspection of all vehicles and depots by the Employer
- The Operator should provide proof of validity of all licences, permits and other requirements as requested

4.3.2 Accounting

- The Operator should keep proper accounting and financial records and have them audited annually

4.3.3 Bus Stops

- The Operator shall use only authorised stops

4.3.4 Sub-Contracting

- Sub-contracting of services may only take place with the approval of the Employer
- The Operator shall take full responsibility for any acts or omissions on the part of the sub-contractor
- The Operator may sub-contract between 10 and 50% of the revenue kilometres of the contract for any given month

4.3.5 Renewal Of Contract

- The Employer may decide to invite new tenders at the end of the contract period
- The Operator will be awarded the new contract if:
 - His tender amount is less than 5% higher than the most acceptable tender
 - He can perform the new contract at the most acceptable tenderer's rates
 - The operator complies with the tender requirements of the new contract
 - The operator has performed his contract to the satisfaction of the Employer

4.3.6 Contract Documents

- The Operator shall refer any uncertainties in the documents to the Representative

4.3.7 Escalation

- Rates will be escalated annually according to an escalation factor calculated by the Employer

4.3.8 Fares

- Fares charged will be subject to approval by the Employer and will be escalated annually

4.3.9 Information Required

- The Operator should install electronic ticketing equipment
- All information relevant to the contract should be made available to the Employer, including that obtained from electronic ticketing equipment

4.3.10 Insurance

- The Operator is responsible for obtaining public liability insurance as well as any other insurance required by the Employer over the duration of the contract period

4.3.11 Payment

- The Operator shall receive a lump-sum payment of 1% of the tender amount to defray establishment costs 14 days after commencement of the contract
- The Operator will be paid monthly for provision of services as agreed to in the tender rates

4.3.12 Penalties

- Operators will be penalised for offences
- If the total penalty for 3 consecutive months exceeds 10% of the total amount payable per month, the Employer may terminate the contract

4.3.13 Permits And Licences

- It is the Operator's responsibility to obtain and maintain all permits and licences required by the contract

4.3.14 The Representative

- The Representative shall administer and supervise the contract in accordance with the provisions thereof
- The Employer has the right to revise or amend a direction or decision of the Representative and to make a or issue new ones
- All communication between the Operator and the Employer shall take place via the Representative except where specifically provided otherwise

4.3.15 Services Outside The Contract

- In addition to those required by the contract, the Operator may operate any passenger transport service that does not interfere with his ability to provide the contracted service

4.3.16 Suretyship

- The Operator should provide suretyship for 10% of the tender amount (unless otherwise indicated) within 14 days after acceptance of the tender
- Suretyship can be obtained from any of the following:
- A registered banking institution
- A registered insurer
- Small Business Development Corporation
- Cash
- Negotiable government stock
- Negotiable approved municipal stock
- Security bond to the satisfaction of the Employer

4.3.17 Vehicles

- The Operator should provide a statement in addition to his tender, showing what vehicles will be available for the services upon award of the contract and what vehicles will be purchased or leased

- The type and condition of all vehicles should correspond with the Tender Specifications
- All vehicles on the contract shall be painted in uniform livery

4.4 Special Conditions of Contract

4.4.1 Duration

- The duration of contract shall be 5 years.

4.4.2 Penalties

- Penalties shall not be imposed during the first month of operation

4.4.3 Suretyship

- The suretyship required shall be for 4% of the tender amount

4.4.4 Reconstruction And Development (RDP) Initiatives

- All tenderers shall indicate how they intend promoting the achievement of the objectives of the RDP during the contract period, should the contract be awarded to them
- This will be done by means of a written submission attached to the tender in which actions to be taken in this regard are set out, clearly marked and hereinafter called the ‘RDP proposal’
- The following programmes should be used as a guide in drafting the ‘RDP proposal’:

1. Meeting basic needs through:

- Upliftment of communities
- Improvement in quality of life
- Promotion of productive employment opportunities
- Promoting the availability of safe, affordable, accessible, environmentally sensitive transport

2. Wage structures

- Promotion of increased efficiency and productivity
- Developing human resources through:
 - Socio-economic development
 - Occupational advancement
 - Affirmative action programmes
 - Technology transfer
 - Identification and promotion of education and training opportunities at all levels within the company
- 3. Building the economy through:
 - Promotion of economic empowerment e.g. Sub-contracting, franchising, etc.
 - Support of emerging entrepreneurs e.g. Small operators
- 4. Democratising state and society through:
 - Liaison with interested groups and forums
 - Community involvement in identification, prioritisation and implementation of services
 - Negotiation and participation structures for employers ensuring, *inter alia*, gender equity in the company's employment/appointment/training policy
 - Implementation
 - Implementing the RDP proposal
 - A time frame for implementation must be provided within the context of the tender

4.4.5 Employees

- If the Operator is not the same as the incumbent operator for the service required, the Operator will be required to retain at least 75% of the employees of the incumbent operator

4.5 Specifications

4.5.1 Permits

- The successful tenderer shall submit applications for permits for the contracted service to the LRTB or Permit Board

4.5.2 Vehicle Specification

- Where there is more than one sub-contractor, the livery of the different sub-contractors may differ from each other
- The age of a vehicle shall be determined from the date of first registration of the chassis
- A vehicle shall not be older than 15 years at any time throughout the contract period
- No bus may be rebuilt or rehabilitated more than once
- A rebuilt vehicle shall be deemed to be 3 years old on the date of the completion of the rebuilding
- A rehabilitated vehicle shall be deemed to be 8 years old on the date of the completion of the rehabilitation

4.5.3 Statistics Provided

- The incumbent operator will provide the following statistics of the existing services:
 - Number of passengers using cash and multi-journey ticket (MJT) tickets
 - Total passenger trips
 - Total cash and MJT income
 - Total income from ticket sales
 - The date and results of a passenger census on the tendered route will be provided
- These statistics should only be used as a guide
- Tenderers are required to carry out their own investigations to obtain more accurate results

4.5.4 Service Area

- Details of the terrain and road-types will be provided
- Competitive mode of transport is kombi-taxis
- No allowance has been made for scholar trips

4.5.5 Depots

- Details of the location of the depot to be used are given

4.5.6 Routes

- Route numbers and descriptions are provided

4.5.7 Scheduling And Timetables

- Timetables are prepared for Monday to Friday, Saturday and Sunday services
- The tenderer should estimate the number of buses required to operate the services, using this information
- It is assumed that standard buses will be used
- If the tenderer wishes to use different vehicles, he should prepare on alternative tender
- The Representative and the Operator prior to the start of operations will revise the timetable
- Adjustments or improvements may be negotiated between the Operator and the Employer or his Representative
- A summary of trips and average trip kilometres for each of the routes are provided

4.5.8 Fares

- Cash MJT ticket fare structures will be provided
- Scholar fare structures are also specified
- Details on obtaining electronic ticketing equipment is also provided

4.5.9 Schedule Of Quantities

- The total revenue kilometres of travel per month using a standard bus is estimated
- Distances travelled to and from depots are not included in the revenue kilometres calculated
- If a mixed fleet of vehicles will be used, the revenue kilometres per vehicle over the contract period will need to be estimated

4.6 Tender Forms

4.6.1 Tender Form

- The tenderer is required to provide the following:

- The total tender amount offered to operate the service
- The duration for which this offer is valid
- Signature of agreement with the conditions of the tender
- Failure to sign this form may invalidate the tender

4.6.2 Existing Operation

- The tenderer is required to provide the following information on any services operated by him or her:
 - Service area
 - Number of routes
 - Number and type of vehicles
 - Approximate total daily kilometres
 - Average daily passengers

4.6.3 Fleet

- The tender should provide the following information on the existing fleet and vehicles be used in the contract:
 - Vehicle registration number
 - Type and model
 - Whether new or used
 - Whether purchased or leased
 - Bus type
 - Manufacturer of body, engine and chassis
 - Year of first registration of the chassis
 - Year of rebuild or rehabilitation of body and chassis
 - The average age of chassis and body should be calculated

4.6.4 Electronic Information And Ticket Equipment

- Details of the electronic equipment to be used in the contract should be provided.

4.6.5 Schedule Of Quantities

- The total tender amount is calculated on the basis of:
 - Scheduled revenue kilometres estimated
 - Tender rate per kilometre
 - Establishment cost of 1.0% of this total
 - 0.75% for the Interim Industry Restructuring Fund

4.6.6 Income And Expenditure

- The income and expenditure for the first 12 months of the contract is estimated
- Total operating revenue is calculated on the basis of:
 - Cash and worker passenger sales
 - Scholars
 - Subsidised kilometres
 - Total expenditure is calculated on the basis of operating, maintenance, management, finance and profit or loss values

4.6.7 Escalation

- The escalation factor is calculated taking the following indices into account:
 - Labour
 - Vehicle
 - Fuel
- The tender provides default values approximating these if needed

4.6.8 Permit Details

- The tender should provide the following details on permits currently held:
 - Date of issue
 - Issuing authority
 - Routes/area
 - Number of buses

4.6.9 RDP Proposal

- The tenderer should provide the following information on the actions to be taken to implement the RDP Proposal:
 - Description of action
 - Implementation date
 - Estimated value

4.6.10 Employees

- The number of employees in each staff category should be calculated as well as the total number of employees needed for the contract

4.6.11 Acceptance

- Once the tender has been accepted, the actual contract and deed of suretyship should be completed.

4.7 Implications for Study

This document was used as a basis for establishing the issues to be dealt with in the survey of transport operators. The document was thoroughly studied and the broader issues of importance identified. These issues were as follows:

1. legal
2. financial
3. technical
4. sensitive

The main points were extracted from the document and classified under these headings. This resulted in the breakdown of the document as follows:

4.7.1 Legal Issues

- 1 Tenderers are required to be registered as taxpayers and to have all their tax details in order. Waivers in this regard could be considered to encourage participation.

- 2 Companies should be ring-fenced, which means that their business and accounts should be separate from any other business or entity and their business should be financially sustainable (they should make a profit when taking all major costs into account).

4.7.2 Financial Issues

- 1 The successful tenderer should be able to obtain suretyship. This is a guarantee by a legally recognised financial institution. The value should be 4% of the total tendered amount. This should be obtained within 14 days of being awarded the contract to comply with the tender rules.
- 2 The operator should have sufficient capital for the contract. This should allow for the cost of producing a tender and the start-up costs needed if the tender is successful. These include installing electronic information and ticket equipment (EE), financing additional vehicles and complying with the specifications of the contract.
- 3 The financial records should be in order. Authorities are allowed to request an audit of tenderers to satisfy their concerns in this regard.

4.7.3 Technical Issues

- 1 Operators should have records of services operated previously as proof of a good 'track-record' in this regard.
- 2 They should also have a good knowledge of Operations Costing. They should be able to calculate the operating cost per kilometre travelled, taking every important cost into consideration. Failure to do so would result in an unrepresentative tender estimate, where there would be large uncertainty.
- 3 Good Vehicle Scheduling techniques are important to obtain good estimates of the number and type of vehicles needed for the service. This is also necessary to obtain estimates of the type and value of vehicle financing required by the operator. Operators should also be able to draw up timetables and operate effectively using this framework.

Severe penalties are imposed for not sticking to the timetable and sufficient spare vehicles should be available for breakdowns.

4.7.4 Sensitive Issues

- 1 The vehicle age is important as it decides whether it may be used for the contract or not. Of particular importance is the date of first registration of the chassis of the vehicle. Whilst equivalent vehicle age depends on the number of times it has been rebuilt or rehabilitated, the age of the chassis remains constant. This value is therefore used as a benchmark. For a bus, the maximum age is 15 years. If it has been rehabilitated, this value is 22 years and if it has been rebuilt, it is 27 years.
- 2 Ten percent of the tender is evaluated on its policies concerning the Reconstruction and Development Program (RDP). These include affirmative action policies, education and training, promoting community involvement, economic empowerment, supporting emerging entrepreneurs, etc. For this reason, tenderers are also required to subcontract a portion of their service.

4.8 Summary

The model bus operations document was used as the basis for drafting the questionnaire used to obtain information relevant to this study.

The sections containing the Tender Rules and General Conditions of Contract may not be changed when compiling the documents for the tender. The province in charge of the tender may amend the sections containing the special conditions of contract, specifications and tender forms.

The model tender document was broken up into sections containing legal, financial, technical & sensitive issues. These issues were used to structure the questionnaire used in the study.

4.9 References

Provincial Administration of the Western Cape ; 1999 ; Model Public Passenger Transport Service Tender Document.

5 TRANSPORT OPERATOR INFORMATION

5.1 Research Methodology

For this survey, it was decided that a questionnaire would be used to obtain information. Personal interviews and telephone surveys were ruled out due to the number of questions that had to be asked.

Separate questionnaires were designed for bus and minibus taxi operators as their operational structure differs somewhat. The main issues concerning both were fairly similar and so this aspect will be discussed in one section. Under each heading, there will be a separate discussion of both bus and taxi perspectives of the problem. It is the researcher's opinion that this will make for greater clarity of purpose and enable a collective study of both, whilst still maintaining individual differences.

Bus operators are the primary group focused on in this study as the tendering of routes affects them immediately since taxi operators will not be allowed to participate in the first round of tenders. They will, however, be included at a later stage. To ensure completeness of the study, the researcher has made an effort to study both public transport operator groups, but with a greater emphasis on bus operators.

Bus operators are better regulated than taxi operators and were therefore asked for formal operational details, whereas taxi operators were asked more about their operating methods used.

5.2 Questionnaire design

5.2.1 Introduction

The less intrusive, multiple choice questions were placed at the start of the questionnaire, the more detailed table-type questions near the middle and the more descriptive and/or intrusive questions near to the end.

The content and design of questions were optimised through consultation with transportation engineers as well as persons working in the field of public transport. Copies of the final drafts of the questionnaires for the bus and taxi operator surveys are shown in Appendix B.

The motivations for each question is outlined below in sequential order for bus and taxi operators respectively:

5.2.2 Questions to bus operators

Question 1: Identifying whether respondents were aware of the new tender system.

This information was needed to find out how many operators were informed about the tender. If the numbers are too low, additional measures should be taken to ensure that the new tender system is better advertised.

Question 2: Determining whether respondents could provide a minimal level of suretyship for the contract.

This question was asked to identify how many tenderers had sufficient assets to obtain the minimum level of suretyship required by the tender. Estimates were used to get an idea of the value of the smallest contract. A single standard bus was used in the calculation.

Question 3: Finding out if companies are ring-fenced.

The tender board requires company ring-fencing. A company is ring-fenced if its business dealings and records are separate from any other company/entity's.

Question 4: Determining whether businesses are financially sustainable or not.

Financial sustainability is linked to the issue of company ring-fencing. These issues were separated so that each could be explained in detail separately. This was in aid of simplifying the questionnaire for respondents. All costs should be taken into account and if the business still makes a profit, it is considered sustainable.

Questions 5 & 6: Determining whether businesses keep financial and operating records.

Financial and operating records are important to determine whether the business keeps proper business records. Operational records are required by the tender board to ensure that the operator has a proven track record and sufficient experience in operations. All tenderers are

required to submit an estimate covering income and expenditure for the first year of operation of the tendered service. Experience in preparing financial records would count in their favour in this regard.

Question 7: Table of numbers of vehicles of each type and age.

The numbers, capacity and age of vehicles were requested. The motive behind this was to obtain a vehicle profile for each operator. This information could then be used to determine how many vehicles each operator possessed as well as if these were suitably equipped to be used in the tender.

The number of rehabilitated and rebuilt buses was also requested. This information is essential in determining the tender suitability of vehicles. This type of servicing alters the age of the vehicle, which is a major determinant in vehicle suitability. All vehicles have to obtain a roadworthy certificate before commencement of the tender contracts (Provincial Administration of the Western Cape ; 2000).

Question 8: Determining whether rebuilt and rehabilitated buses comply with the standards for the rebuilding and rehabilitation of vehicles.

This was to ensure that operators had a clear understanding of what is meant by rehabilitation and rebuilding. This would enable them to give a more informed answer to a number of questions where the understanding of this concept is essential.

Section 9: Table of vehicle operating costs and mileage rates for each type of vehicle.

Respondents were asked for the rates at which they operate their vehicles. This would enable an understanding of the type of range operators varied by as well as the range of rates for the various vehicle types. A range of different rate types was requested to allow for flexibility in response. Operators were given the option of providing rates for operating costs per kilometre or per hour, kilometres travelled per week or hours of operation per week. Many operators only filled in those rates that they were familiar with or kept track of in their operations.

Section 10: Determining the level of comprehensiveness of the vehicle operation costing procedures used by respondents.

This question deals with the degree of detail in costing bus operations. To determine how comprehensive their calculations were, the essential costing factors were listed in the Appendix. Respondents were required to state whether they considered these costs.

Section 11: Familiarising respondents with the techniques used for calculating vehicle-operating costs.

No response was required to this question. Respondents were given an operation costing calculation, following on from the concept discussed in Section 10. This served to help operator understand the previous question better and to familiarise them with a procedure used in operations costing.

Question 12: Verifying whether respondents have any experiences with vehicle scheduling and determining the type of experience they have, if any.

It was important to determine how familiar operators were with vehicle scheduling. A short description was given to ensure that operators understood that it involved calculating fleet sizes and timetables to operate a service. It was important to see the types of methods they used in scheduling. It could then be assessed whether they needed assistance in their scheduling methods or if these were sufficient for them to operate a tendered service.

Question 13: Verifying whether respondent is familiar with the procedure used in a simple bus-scheduling example.

This scheduling exercise given involved a main trunk route with three branches. It had to be determined whether respondents understood the principles of vehicle scheduling. The example was taken from a course on Transport Systems by Doctor Van de Voort and provided a sound basis for determining this.

Question 14: Table of Employee type versus gender, race and level of education. Total numbers of employees of each type are required.

The Employee structure of the company was important tool in determining the balance of race, gender and education within the company. These elements form an important part of determining the equity issues that will be analysed in the tenderer's RDP proposal. All tenderers are required to submit an RDP proposal, outlining the steps they intend taking to ensure that their company implements government's goals and objectives in this regard.

Subjects such as gender equality, racial integration, education and the training of employees form a major part of the tenderer's focus in this regard.

Question 15: Determining whether companies are registered with South African Companies Registrar Office (SACRO) and if so, requesting their company registration numbers.

If companies are registered with SACRO, their company name and other contact details can be traced and compared with details given by the respondent. This information will also provide a check as to whether the respondent is being truthful in his/her responses and whether the content of their questionnaire can be trusted. This can also provide researchers with real time information regarding change in contact details of a company as well as the company name.

Question 16: Request for contact details of the respondent's bus operations company.

This question allows respondents to fill in their company names as well as contact details. These details are verified using the SACRO website. Where details do not match existing records, the appropriate changes are made once the correct details have been verified.

Question 17: Verifying whether the respondent is a registered taxpayer.

This question determines whether respondents are registered taxpayers. Since only registered taxpayers are allowed to participate in the tender, this information is of crucial significance to this study. Once it is determined how many respondents are taxpayers, it will provide an indication of how crucial this issue is in the tender. If most respondents are not taxpayers, it will provide a strong case in favour of making changes to accommodate this sector of the market.

Question 18: Providing feedback on the three most important problems with the tender as well as comments and suggestions.

Feedback is an essential part of any survey. When a pilot survey is conducted, it can provide useful information to aid the design of the final questionnaire.

In the actual survey, respondents are able to clarify their views beyond the confines of a multiple-choice answer. They can express themselves more freely and give the researcher a better understanding of the message they are trying to convey. It also allows the researcher to focus on issues beyond the strict confines of the study and consider information that could have a direct bearing on the study, but would otherwise have been overlooked. This section

therefore represents a very important means of informing the study and providing ideas and solutions from those that are directly affected by the study.

Question 19: Request for background information on the levels of experience of bus operators.

The section regarding background information was not directly related to any particular aspect of the actual tender document. Rather, the information contained in this section was used to supplement the responses pertaining to more relevant questions and provide an overall picture of the circumstances of the respondents.

The age of the company was an important bit of background information. This was used to determine the magnitude of experience each operator possessed in public transport. This is on the assumption that experience is roughly proportional to years of operation.

5.2.3 Questions to taxi operators

Questions 1 to 6: Introductory questions

These questions are essentially the exact same as those for bus operators with the exception that question 4 for buses is question 6 for taxis. Where the wording has been changed, this was done to account for the different type of operators being addressed. Mostly, anything referring to 'bus' was changed to 'taxi'.

Question 7: Table of taxi types and ages.

The table of taxi types and ages is very similar to the bus question 7. The only difference is that different time periods are used for the age of vehicles and only midi and mini buses are allowed for in the taxi question. Different time periods were needed to account for the fact that midi and mini buses had a shorter lifespan than articulated, standard and medium buses do. The maximum age for a mini bus was assumed to be 7 years.

The inclusion of year three in the table was to break up the period of seven years. If this had been omitted, respondents might have felt that they were not able to give a full report on the state of their fleet. Three time scales gave respondents more of an opportunity to feel that their situation was being accurately assessed.

Question 8: Determining how often vehicles are replaced in years.

This question obtains a direct response for the period of replacement of vehicles that applies to the whole fleet for each respondent. This can be viewed as an average replacement period and compared to the number of vehicles over certain ages entered in the table in question 7. The results would provide for an interesting comparison between answers to the same question, phrased indirectly or directly.

Question 8 is phrased directly in that it requests the exact information required. Question 7 requests general information whilst also focussing on the age of vehicles. This information can be used to calculate an approximate answer to question eight. Inconsistencies in these results could also be due to poor ability to estimate quantities by respondents. It is the researcher's opinion that most operators are not accustomed to keeping proper records in this regard and are making some accurate and some gross estimates in responding to many of these questions.

Question 9: Determining the frequency of routine maintenance operations for the vehicles in a respondent's fleet.

The tender contract requires that vehicles be tested for roadworthiness every 6 months and before commencement of the contract. This question addresses the topic of routine maintenance and allows for four time periods. The time periods are zero to three, three to six, six to twelve and over twelve months. Routine maintenance is not, however, the same as the roadworthy testing required by the tender. The results of this question cannot therefore be assumed to reflect the degree of compliance with tender procedure.

Roadworthy testing of vehicles is not strictly enforced at present and it is the opinion of the researcher that a measure of this maintenance procedure would not be a true reflection of the state of the vehicle fleet of any operator. Only once roadworthy testing, as a law, is strictly enforced, can operators be expected to do these checks on a regular basis. The type of maintenance required by this question refers to repairs to the vehicle when necessary and indicates the level of care taken to keep the vehicle functioning.

It should also be emphasised that some vehicles may be driven with care and not need as much repairs as a vehicle that is driven recklessly. All these factors should be taken into account when considering the results to this question.

Question 10: Establishing the method of payment of drivers.

This question requests the wage structure used to pay drivers. Respondents are given the option of a fixed amount, keeping the balance after paying owner fixed amount and other methods that can be specified. The wage structure of a company gives indication of the types of financial and operational procedures that are likely to be used. It also enables the researcher to estimate whether the operator or the driver covers certain costs pertaining to vehicle maintenance and operation in certain cases.

Successful tenderers are required to staff 75% of their employees from the staff of the incumbent operator to be used in the contract. These employees are given a five-year contract (for the period of operation of the tender). They are then retrenched and paid for their period of service of the incumbent operator only. The wage structure used should be one that is agreeable to all parties involved.

Question 11

This was similar to bus question 9, except for the fact that only mini and midi buses were allowed for in the rates estimations.

Question 12: See bus question 10.

Question 13: See bus question 11.

Question 14: See bus question 14.

Question 15: See bus question 12.

Question 16: See bus question 13.

Question 17: Establishing whether the respondent's company is registered with the Provincial Taxi Registrar.

Respondents are asked if they belong to an organisation that deals exclusively with taxi operator issues, called the Provincial Taxi Registrar. Operators who belong to this organisation are in a position to be informed of latest developments in the taxi industry and possibly the tendering process. If sufficient operators are members of this organisation, the management

could be a useful medium through which to communicate new ideas and initiatives to taxi operators if a more direct method of approach is not readily available.

If all taxi operators could be persuaded to become members, this could simplify problems involving regulation and enforcement of new laws and policies in the public transport industry.

Question 18: See bus question 17.

Question 19: See bus question 15.

Question 20: See bus question 16.

5.3 Method of Distribution

5.3.1 Distribution of bus questionnaires

Through consultation with SABOA chairperson, Mr George Maluka, the latest contact details of all SABOA members were procured. In this manner, a large number of bus operators, 74 in total could be contacted directly. Due to complications associated with visiting each operator individually, the decision was made to send the questionnaires by post once telephonic permission was obtained. Unfortunately, very few (less than 50%) of the operators could be reached telephonically. The operators that were accessible were advised about the survey and its importance and asked for permission to send the survey by post.

After two weeks, follow-up phone calls were made to ensure that the surveys were received and to offer assistance in clearing up any misunderstandings.

5.3.2 Distribution of taxi questionnaires

Although efforts were made to obtain contact details for minibus taxi operators from the Provincial Administration of the Western Cape (PAWC), they were unsuccessful due to the classified nature of the information.

The Western Cape Taxi Council was contacted to assist with surveying taxi operators. Questionnaires were filled out during meetings and given to taxi operators for distribution and collection.

The Western Cape Taxi Association was approached for assistance, but unfortunately they failed in retrieving any surveys from members of their association.

As a last resort, the researcher made use of contacts in and outside the transport industry to distribute and collect questionnaires from public transport operators.

5.4 Getting Feedback

5.4.1 Obtaining feedback from bus operators

Reminder letters were sent to all respondents to ensure that they understood the importance of the survey and to encourage them to co-operate in answering the questions. See Appendix 3a.

Due to a very poor response rate to the first wave of questionnaires of around 10%, it was clear that a different approach was needed to improve the response rate by encouraging operators to participate in the study. It was decided that added incentives would be needed. Through telephonic conversations with respondents, it was found that many operators were apprehensive about the confidentiality of the study. There were also elements of mistrust between operators as well as between operators and the authorities. Many respondents felt that the government that had a track record of corruption could not be trusted. Respondents felt more comfortable relaying their concerns by telephone, but were reluctant to put these in the questionnaire when encouraged to do so.

Many of these concerns were unfounded, but some could not be ignored as they were very legitimate in their apprehension. The researcher could not provide a complete guarantee that the information provided would be kept confidential. For this reason, many operators that felt wary were encouraged to retain their anonymity and refrain from entering their contact details in the section of the questionnaire in question. The concerns that were unfounded were addressed and respondents ensured that these matters had been resolved.

To give the study a stronger backing, it was decided that the study should be strongly endorsed by organisations that the operators felt they could trust. The South African Black Technical & Allied Careers Organisation (SABTACO), an organisation that empowers disadvantaged small businesses, was asked to endorse the study by means of a letter to be attached to the second wave of questionnaires. See Appendix 3b for a copy of this letter. An added incentive involved asking the respondent if they would require a copy of the results of the study for market research purposes. This is shown in Appendix 3c.

A new cover letter was also drafted, with the help of the chairperson of SABTACO and the researcher's colleagues in the Department of Civil Engineering at the University of Stellenbosch. This letter can be seen in Appendix 3d.

5.4.2 Obtaining feedback from taxi operators

Despite the efforts made to retrieve questionnaires and ensure that operators were informed of the purpose and importance of the study, many respondents were apprehensive in divulging information and the resultant response rate was comparatively low.

Respondents were assured that they could remain anonymous by not entering contact details if they so wished, but this assurance did little to ease their concerns.

5.5 Sorting Responses

Both bus and taxi responses were numbered sequentially according to the order in which they were received. Master questionnaires were compiled to code bus and taxi responses respectively. Questions were numbered differently to the way they appeared on the questionnaire. The main difference was that where tables were provided, each entry in the table was given a question number. This method was used to simplify the entering of responses into a database for analysis of results.

The master questionnaires thus contained a numbering system different to that of the questions in the questionnaire. The questions in the master questionnaire ranged from 1 to 133 for the bus questionnaire and from 1 to 94 for the taxi questionnaire.

Question answers were entered into a Microsoft Access™ database table to enable analysis of the data. Separate tables were made to distinguish between bus and taxi operators. Contact details were entered into a separate table to questionnaire responses to retain the anonymity of the respondents when analysing the data.

In multiple-choice questions, the numbers 0, 1 and 2 were used to denote no response given, a 'yes' response and a 'no' response respectively. Questions that requested numerical answers contained a text field that only allowed numerical answers to be entered. This system of entry provided a check that answers were being entered correctly into the database.

Questions that required text answers could not be placed in the common database of answers since only numerical input was allowed for. This was essential to being able to perform calculations on the data using the tools of the database. Text answers were placed in separate tables in the database to simplify analysis of responses.

Questionnaires were thoroughly checked for inconsistencies in the information provided. Where numbers given did not add up to totals given, changes were made where the error was apparent. In other cases, allowance was made to add up the magnitude of missing information. This was done to simplify calculations and as a check as to whether all information was entered.

5.6 Method of Analysing data

The database of information was analysed using the functional tools of the database in calculating averages, standard deviations, arranging in ascending or descending order, etc. Queries were used to group responses, perform counts of numbers of responses of a certain type and sum or average answers to a question.

Results of queries could be exported to a Microsoft Excel™ worksheet for further analysis. This allowed for more flexibility due to the wide range of functions available in Excel™. The average and standard deviation functions were used extensively. Data could be grouped into compact tables and the relevant calculations performed in this manner.

The decision was taken to analyse multiple-choice questions as a group as their answers were in the same format, which was either 'yes', 'no' or no response. These results were displayed using bar charts. Where taxi and bus responses could be compared, their values were plotted as percentages of the total responses to the question only. Non-responses were ignored in these graphs to enable a direct comparison between bus and taxi responses.

The numbers of non-responses were mentioned in the text, as this information was important in ensuring that the question be analysed in a comprehensive manner. A high number of non-responses could indicate a lack of understanding of the question or unwillingness by the respondent to divulge certain sensitive information. Two possible reasons for this trend have been mentioned. A number of reasons could be responsible for a low level of response to a question. An understanding of the specific question could provide a better base for assessing which reason/(s) are the most plausible.

Questions that could not be compared were analysed separately. According to the type of information available, either bar charts or pie charts were used to display the results. Bar charts were used primarily for purposes of comparison of results. Where information could be compared for different respondents, bar charts were compiled for each question displaying information for each respondent. In this way, answer readings could be compared for each respondent over a number of questions. This allowed the researcher to identify trends or patterns in responses. This method of analysis allowed for a comprehensive review of the information provided by the survey.

Pie charts were used to identify the role played by certain elements in a system. Where a single concept was being analysed, pie charts were useful in providing a comprehensive understanding of the structure it is composed of.

5.7 Summary

Separate questionnaires were designed specifically for bus and taxi operations to gather information regarding their views on the tender as well as their ability to tender.

The format of the questionnaire was the same for both. General multiple choice questions were placed at the start, detailed questions near the middle and more intrusive and descriptive

questions near the end of the questionnaire. The reason for this was to ensure that respondents were free to omit answering personal questions if they chose to once they had completed the more general questions.

Questionnaires were distributed to bus and taxi operators. To improve the response rate, follow-up phone calls were made and letters sent. Letters of endorsement and offers of receiving copies of the results of the study were incorporated into the second wave of questionnaires.

The response rate was roughly 20% for both taxi and bus surveys. Responses were entered into a Microsoft Access[™] database. The information required was analysed and tabulated using Microsoft Excel[™] worksheets.

5.8 References

Provincial Administration of the Western Cape ; 2000 ; First Phase Bus Tendered Contracts for the Cape Metropolitan Area: Report on Community Meetings to introduce The Bus Contract System & obtain feedback, Department of Economic Affairs, Agricultural & Tourism: Transport Branch ; Western Cape.

6 ANALYSIS OF RESPONSES

6.1 Introduction

This section contains the analysis of information derived from the questionnaire. When taken out of context, it can be difficult to see the significance of a particular question. For this reason, bus and taxi responses were analysed together and questions grouped under descriptive headings.

Many of the graphs in this chapter are titled according to the question number. A full description of each question can be found in Appendix B as well as in chapter 5.

Responses are analysed by similar criteria used in the design of the questionnaire. Certain changes were made to make the information presented more readable and easy to understand. The results should provide for a good understanding of the status quo of transport operators in terms of their preparedness to tender.

6.2 General Information

6.2.1 Knowledge of Tender

When asked for their response, 88% of bus operators were aware of the impending tender of bus routes. 86% of taxi operators also had knowledge of this. Refer to Figure 6.1.

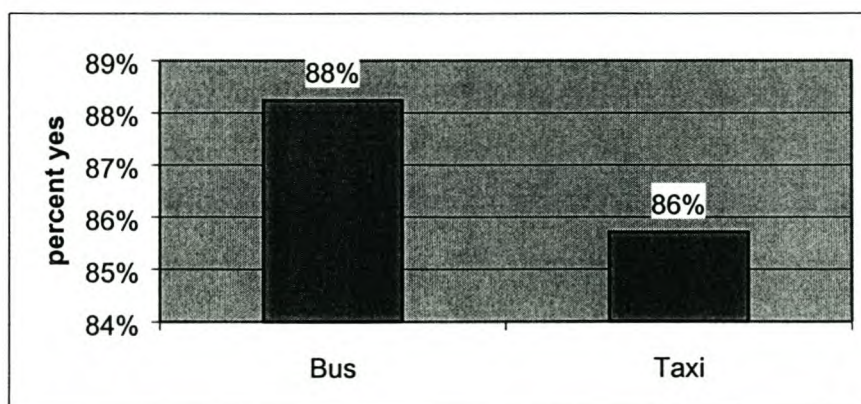


Figure 6.1: Operators with knowledge of tender

This shows that more than 10% of operators of both bus and taxi had no idea that a public tender would be called for in the next few months. Although SABOA had indicated that notices of the tender were sent to their members, there was no guarantee that they would actually be informed of this. The chairperson of SABOA (Western Cape branch), Mr Maluka, informed me that many notices sent to SABOA members remain unopened.

One respondent suggested that tender notices be sent to all operators individually, thus ensuring that all interested parties were informed.

6.2.2 Contact Details

The South African Companies Registrar Office (SACRO) has a web site: wwwdti.pwv.gov.za/sacro/default.asp. This site provides details of all companies registered with SACRO.

Registration numbers can be used to verify company names and contact details quite easily. All the registration numbers given by respondents were consistent with the information provided when verified through the web site with one exception. The respondent's company name differed from the name given. All other contact details for this company was the same as our records. It was likely that the name of the company had merely been changed. This could not be verified by contacting the company directly, as attempts to do so were unsuccessful.

Only 35% of bus respondents were registered with SACRO. No taxi operators were registered with them. See figure 6.2.

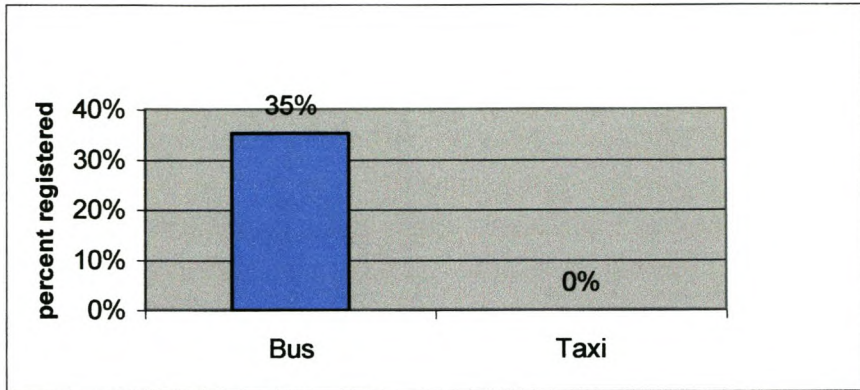


Figure 6.2: Operators registered with SACRO

Since most bus operators were already registered with SABOA, many did not feel the need to register as a company as well.

Refer to Figure 6.3. 77% of taxi operators were registered with the Provincial Taxi Registrar (PTR), with one non-response to this question.

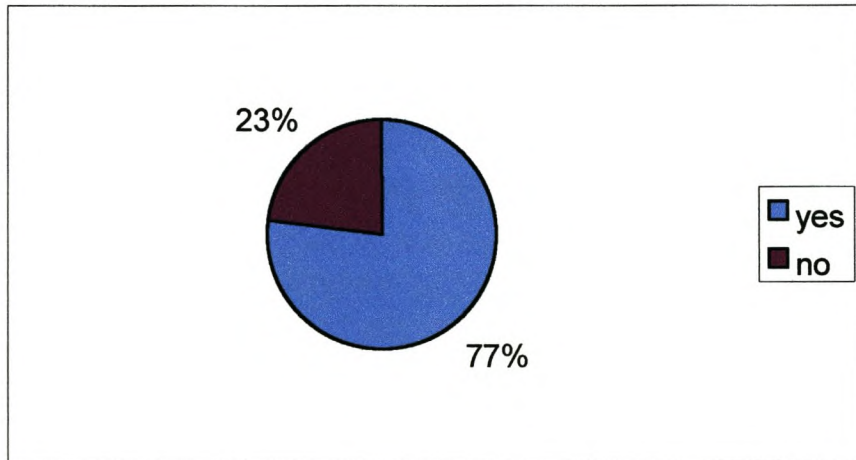


Figure 6.3: Taxi operators registered with PTR

Although most operators were not officially registered as companies, a large percentage of them were in fact members of bodies that could provide them with advance notice on important developments in industry.

6.2.3 Vehicle Operating Costs

An estimate of vehicle operating rates was needed to assess the discrepancies in pricing amongst operators as well as to obtain estimates for further costing calculations if necessary. Refer to Table 6.1 and Table 6.2.

Bus	Rate	Count of number of Answers								Average	Std
Type	Type	1	2	3	4	5	6	7	8	Answer	Dev
Articulated	R/km	5								5	0.0
Standard	R/km	2	3.52	4	4.5	5.5	6	6.2	60	5	1.5
	R/h	30	238							133	146.7
	km/week	100	320	400	2700					880	1219.9
	h/week	10	40	52.5						34	21.8
Medium	R/km	5.5	6.5							6	0.7
	R/h	35								35	0.0
	km/week	850								850	0.0
	h/week	52.5	1500							776	1023.5
Midi	R/km	3.2	4	4.5	5					4	0.8
	R/h	25								25	0.0
	km/week	350								350	0.0
	h/week	52.5	800							426	528.6
Mini	R/km	1	2	2.75	2.85	3				2	0.8
	R/h	20	33.3							26	9.4
	km/week	1670	2000							1835	233.3
	h/week	52.5	60							56	5.3

Table 6.1: Bus Operating Rates

Rate type	Count of Number of Answers			Average	Standard
	1	2	3	Answer	Deviation
R/km	3			3	0.0
R/h	60			60	0.0
km/week	5	770	7506341	388	541
h/week	10	48	60	39	26

Table 6.2: Taxi Operating Rates (for minibuses)

Operating costs were measured in R/km and R/h.

The average operating costs for vehicles were calculated for bus and taxi respondents. Outlying estimates were excluded from the calculation.

The response of R60/km for the standard bus was removed from the calculation as the other estimates more than nine times smaller than this estimate. The average answer was found to be R4.50/km with a standard deviation of R1.50/km.

This value can be compared with vehicle operating costs in a study conducted by Wayne Duff-Riddell for the University of Stellenbosch (Duff-Riddell, W.R. ; 1997). Golden Arrow Bus Services provided costs. Using an estimate of overheads of R190 650 per year, running costs of R1.96 per km and a total mileage of 62 700km/bus/year, vehicle-operating costs were calculated. These figures are valid for a standard bus and exclude interest, depreciation, driving license and insurance in the costs. An estimated vehicle operating cost of R5.00/km was obtained.

This estimated cost is higher than the average obtained from the questionnaire study. We can assume that the actual cost of operation of a standard bus is greater than R5.00/km when all costs as well as inflation is included in the estimate.

The midi bus had an average rate of R4.20/km with a standard deviation of 80c per kilometre.

For taxi respondents, the rate was R3.00/km. Since only one respondent provided this information, the standard deviation is not applicable. This result measures favourably with the average for bus respondents, who priced their minibus taxi operating rates at R2.30 on average with a standard deviation of R0.80.

In the study by W.R.Duff-Riddell (Duff-Riddell, W.R. ; 1997), the total operating costs of a minibus taxi is calculated to be R2.16/km. The overheads were R600.00/month, with a mileage of 6000 km/month and running costs of R10203.55/month. A 20% profit margin was assumed in the calculation.

This estimate of R2.16/km is slightly lower than both estimates obtained for the average operating costs for a minibus taxi. The value should be higher due to inflation from 1997 to 2000.

6.2.4 Vehicle Mileage Rates

An entry of 2700km/week for a standard bus was also ruled out, as the three other rates given were about ten times smaller than this value. This very high value could either be an error in judgement or the bus/(es) could be involved in a long-distance service. Since the focus of this study is on shorter distance commuter services, including this reading would only serve to create confusion with this issue. The average was found to be 880 km/week with a standard deviation of 1220. This wide range of values could be attributed to the variability of route length for different operators.

A report by W.R.Duff-Riddell (1997) provides an estimate for the distance travelled by a standard bus in km/bus/year. By converting this value to a weekly rate provides an estimate of 1202 km/bus/week for a standard bus. This value refers to vehicle operating rates for Golden Arrow, the incumbent operator. There is no indication that this estimate for the year 1997 would be much different from the current operating mileage.

The average vehicle mileage obtained from the survey of 880 km/week is lower than the estimate given by the incumbent operator for a standard bus. This result would indicate that the average mileage for the standard bus for the incumbent operator is higher than that for smaller operators.

Due to the fact that route length varies considerably depending on the operator and the type of service offered, the incumbent operator should have a higher mileage due to the open permit this operator holds. The incumbent operator is assured of operating all scheduled subsidised services and therefore has the opportunity to structure operations to utilise all vehicles to their optimum capacity. It can therefore make optimal use of its standard buses and operate them at high mileages to make the best use of resources available.

It seems that standard buses operate the least hours per week, with an average of 34.2 h/week and a standard deviation of 21.8 h/week.

For all bus operators, the average operating time is 56.3 h/week, with a standard deviation of 5.3 h/week.

For taxi operators, the average is 39.3 h/week with a standard deviation of 26.1 h/week. The average value for bus respondents of 56.3 h/week is far higher than the average value calculated for taxi respondents.

The average bus kilometres travelled per week varied from 273 km/week for the standard bus to 1835 km/week for the mini bus from bus respondents.

The average of the taxi answer to this question was very large and could therefore not be accurately compared with the bus response to this question. The third estimate given was too large and therefore regarded as unrealistic.

Without this reading, the average distance travelled per week is 388km with a standard deviation of 541km. This shows that taxis generally travel greater distances than buses do when considering the distance rate per week.

6.3 Legal Issues

6.3.1 Registered Taxpayer

This question raises a sensitive topic for many respondents for reasons that are clearly understandable.

Being a registered taxpayer is a requirement for any company to tender. The results from the questionnaire showed that this tendering requirement would exclude 18% of bus operators and 23% of taxi operators from the tender. One taxi respondent did not answer this question. Refer to Figure 6.4.

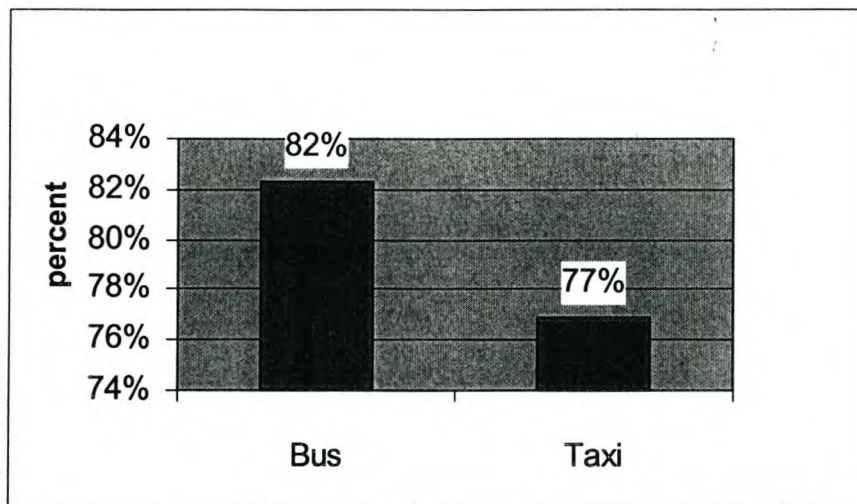


Figure 6.4: Registered taxpayers

A number of taxi operators refused to fill in the questionnaire on the basis that the information could be used to incriminate them for tax evasion. As a result, most of the respondents willing to take part in the survey were taxpayers. This could result in an inaccurate assessment of the total number of taxpayers.

6.4 Financial Issues

6.4.1 Financial Ring-fencing

Financial ring-refers to whether accounting and operational procedures are separate from any other business/entity. Although this term also refers to financial sustainability, the issues were separated to ensure clarity in the information requested and to minimise confusion. Refer to Figure 6.5.

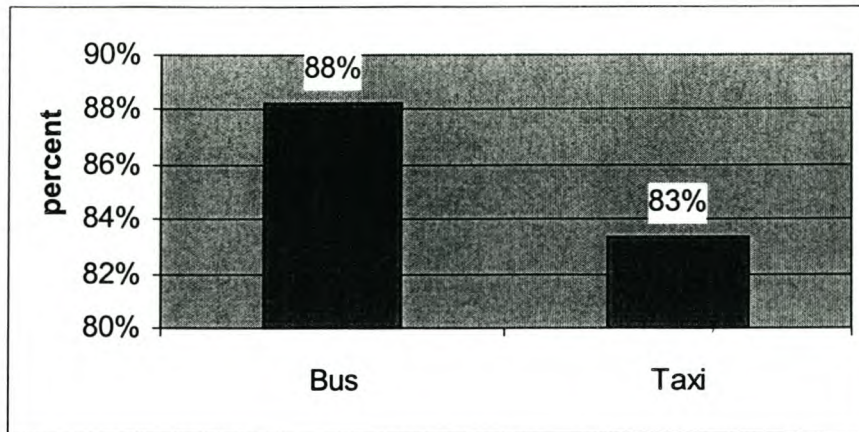


Figure 6.5: Operators with financial ring-fencing

88% of bus operators felt that their businesses were ring-fenced.

12% of bus operators should therefore be educated in proper accounting procedure and be advised to discontinue businesses which are unprofitable.

83% of taxi companies are ring-fenced. The fact that they are ring-fenced does not imply that they are familiar with acceptable accounting procedures as they may only have one business to deal with. Also two taxi operators did not respond to this question. The phrasing was made as simple as possible. The terms used were for the purpose of clarifying this concept, which operators may not be familiar with.

6.4.2 Financial Sustainability

This concept ties in very closely with the issue of financial ring-fencing. To determine sustainability, a number of issues have to be considered. A sustainable business makes a profit after taking all relevant operating costs into account. A number of factors were mentioned for the reason that they are not commonly perceived to be relevant to operators. These included vehicle replacement, maintenance and having spare vehicles for unforeseen circumstances. Refer to Figure 6.6.

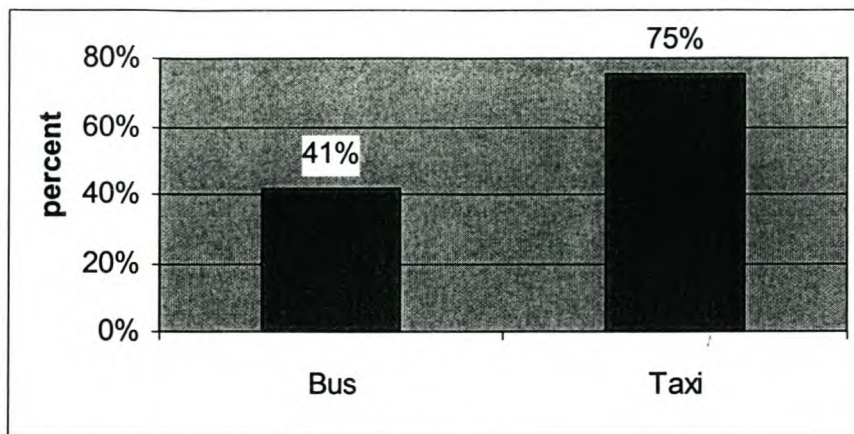


Figure 6.6: Operators with financial sustainability

Only 41% of bus operators felt that their businesses were financially sustainable. It is difficult to understand why 59% of bus operators would remain in business if they were not making a profit.

75% of taxi operators felt their businesses were financially sustainable.

Buses have higher operating costs per kilometre than taxis and also travel fewer kilometres per week (see section: ‘General Information’, subsections: ‘Vehicle operating Costs’ and ‘Vehicle Mileage Rates’). This could contribute to the situation where fewer bus operators make a profit than taxi operators could. Buses are generally more expensive than taxis and would require more capital to replace a vehicle (Duff-Riddell, W.R. ; 1997).

The survey has also shown that more taxis are unsuitable for tendering in terms of age requirements (see Section 6.5.1 Unsuitability of fleet).

This shows that taxi operators generally operate their vehicles for longer than they should be allowed to. This is to a larger extent than with bus operators. They therefore delay having to replace vehicles and have a better opportunity to make a profit from their service than bus operators do. This could be a reason for more taxi businesses being financially sustainable than bus companies.

6.4.3 Suretyship

The minimum suretyship required by the smallest contract value was calculated to be R100 000. The actual minimum tender estimate was not available due to the classified nature of this information. See Figure 6.7.

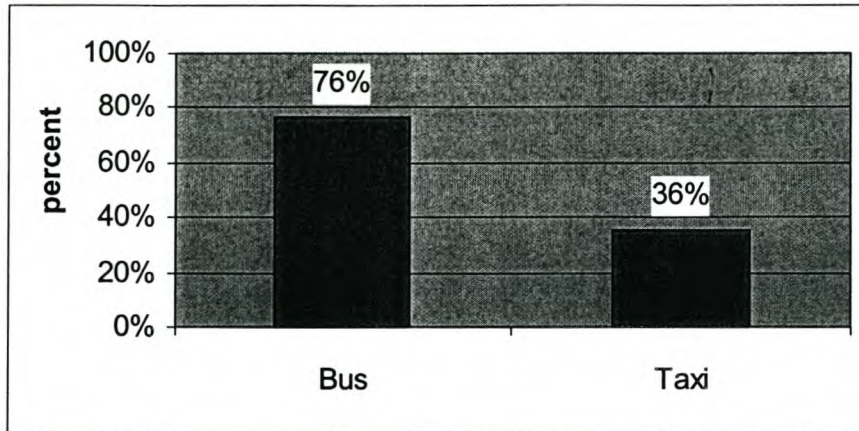


Figure 6.7: Operators able to provide a minimum level of suretyship

76% of bus operators are able to obtain this value of suretyship required by the tender. Capital for bus companies is usually larger than for taxis as the vehicles are more expensive to purchase. Storage facilities should generally be larger to accommodate the larger vehicles as well. More capital is therefore usually available for bus than taxi companies.

Bus industries are also better established as they have been around for longer than taxi companies.

Only 36% of taxi operators could obtain suretyship to the value of R100 000.

This lack of collateral could be problematic as it could prevent 64% of taxi operators and 24% of bus operators from being able to tender.

A respondent suggested that the state provide a guarantee of surety for previously disadvantaged operators for the first five-year contract period. This could be taken as a token of solidarity to compensate for the bad experiences of the past.

Although this might seem extreme, a similar initiative might be required to ensure that a large percentage of the transport industry is not excluded from competing for tendered routes.

6.4.4 Financial Records

The tender requires a prediction of the income and expenditure for the first year of the contract from all tenderers. This is to ensure that tenderers have a sound financial plan for managing the contract. Refer to Figure 6.8.

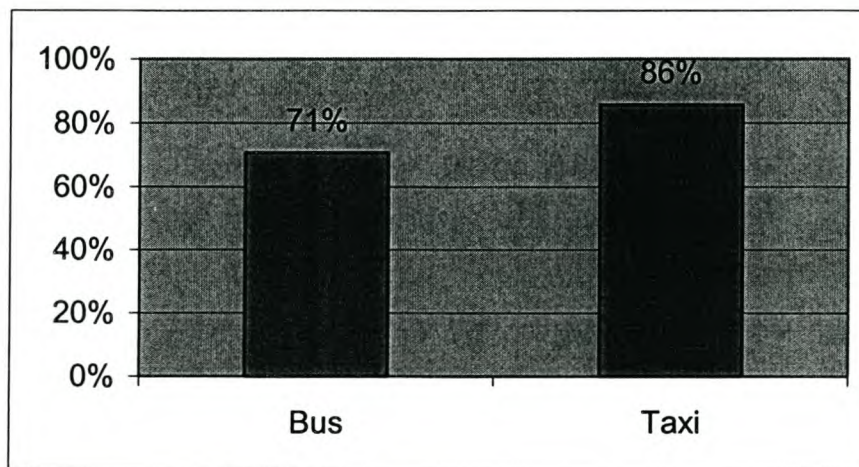


Figure 6.8: Operators keeping financial records

Only 71% of bus operators could provide financial records for the past year. It can be assumed that the remaining 29% of respondents have little or no experience in keeping financial records.

More taxi operators kept financial records over the past year (86%). The reasons for this could be tied in with the type of records kept by certain operators. A number of operators get a fixed amount from their drivers, who are responsible for maintaining the vehicle and all other expenses. 29% of taxi operators fall into this category. Their financial records would be very simple and require very little knowledge of accounting procedures.

6.5 Suitability of Vehicle Fleet

6.5.1 Unsuitability of fleet

The number of unsuitable buses was calculated using the maximum allowable age for a vehicle to be used in the contract. The maximum bus age is around 15 years. The number of rehabilitated and rebuilt buses was taken into account as this reduces the equivalent age of the vehicle. Rebuilt and rehabilitated buses are considered 3 and 8 years old from the time they are worked on. Once this is taken into account, it is possible to see how many vehicles are at an equivalent age of over 15 years. Figure 6.9 shows the percentage unsuitability of bus and taxi fleets.

Unsuitable taxis were calculated using a maximum age of 7 years. Since rebuilding and rehabilitation of taxis is not commonly done, this information did not play a role in determining the number of unsuitable vehicles. It was found that 58% of the taxi fleet was unsuitable as opposed to only 36% of the total bus fleet. See appendices 8a and 8b for details of this calculation.

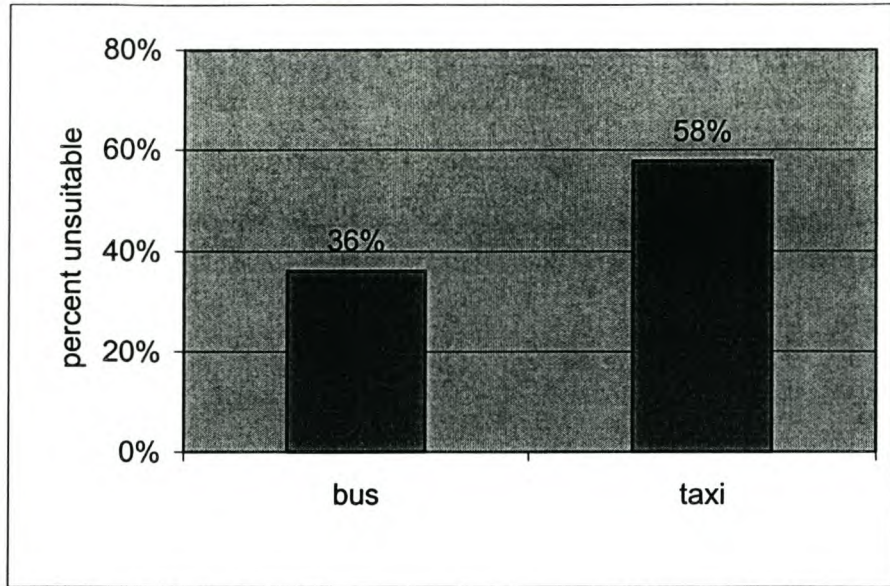


Figure 6.9: Unsuitability of fleets

6.5.2 Vehicle Replacement

By looking at Figure 6.10, we can see that 59% of taxi operators replace their vehicles between 0 and 7 years. This would appear to be inconsistent with the fact that only 42% of the total taxi fleet were found to be under the age of 7 years unless the remaining 41% of operators accounted for a much larger proportion of the total fleet.

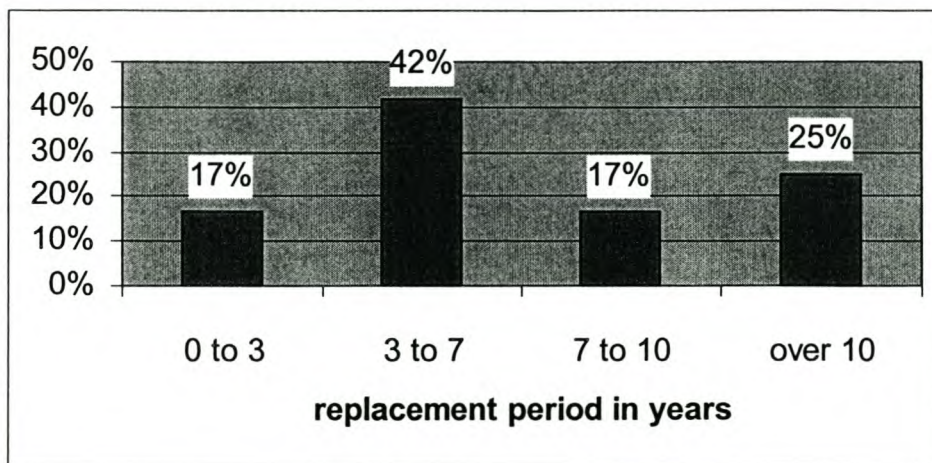


Figure 6.10: Replacement period for taxis

The inconsistency of this information could be due to the fact that many taxi operators would, in principle like to replace their vehicles before they become unsuitable for operation, but might not have the financial means to do so. This could represent the desired age of replacement for some.

An alarming 25% of the taxi fleet is replaced after 10 years of service.

6.5.3 Vehicle Maintenance

92% of taxi operators perform regular maintenance on their vehicles every 3 months. The type of maintenance work done is not clearly specified in this question. See Figure 6.11.

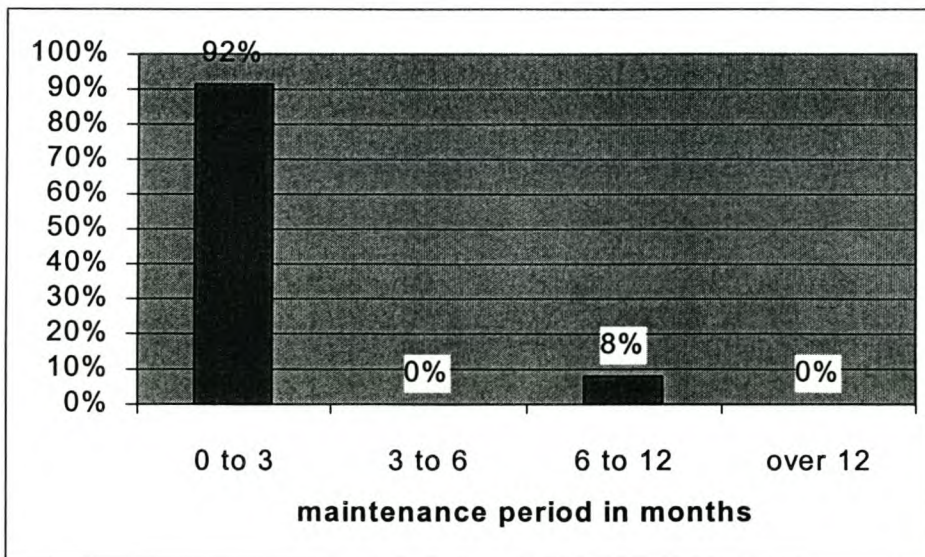


Figure 6.11: Maintenance period for taxis

The tender contract requires a roadworthy certificate for all vehicles to be used in the tender before commencement of the contract. A certificate of fitness of fleet is required every six months to satisfy the Supervisory & Monitoring Firm (Cape Metropolitan Council ; 1999).

It is uncertain whether the repairs done by taxi respondents would guarantee them a roadworthy certificate.

6.5.4 Fleet Structure

The average number of buses per company is 8 with a standard deviation of 10. See appendices 4a and 4b. The average number of taxis is 3 with a standard deviation of 3. It is evident from these values that bus companies usually have a larger fleet than taxi companies.

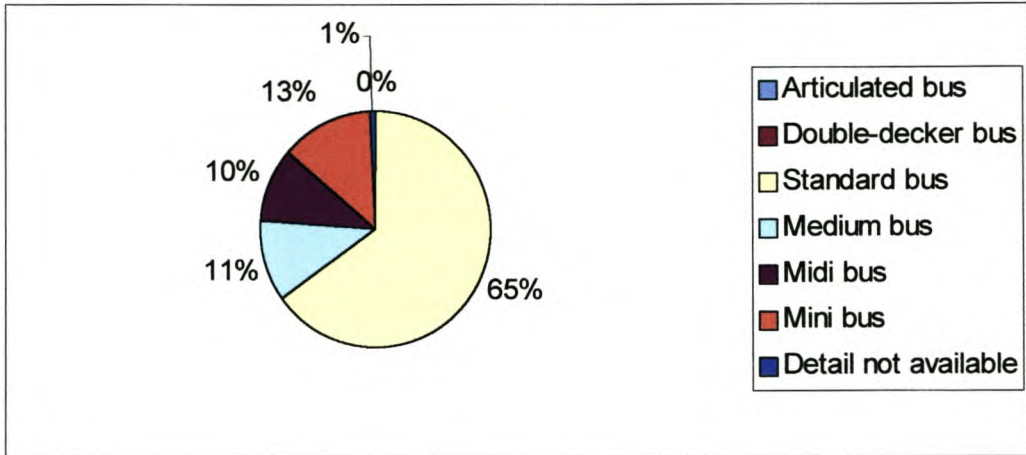


Figure 6.12: Bus fleet structure

Many bus companies own medium (11%), midi (10%) and mini buses (13%) in addition to the standard sized buses (66%). This allows them to provide a more diversified and flexible service to its clients. Refer to Figure 6.12.

When demand decreases, vehicle size can be adjusted to make provision for this. Without this option, the frequency of service would have to be altered to cover the costs of operating a large vehicle.

Refer to Figure 6.13. The taxi fleet consists predominantly of 16-seater vehicles with few (3%) 17 to 35-seater vehicles. This gives them very little scope but to operate as a feeder service. Flexibility is still possible, in that increasing the frequency of service and hence using more vehicles can supplement an increase in demand. This does, however, increase congestion more than if a larger vehicle were used instead.

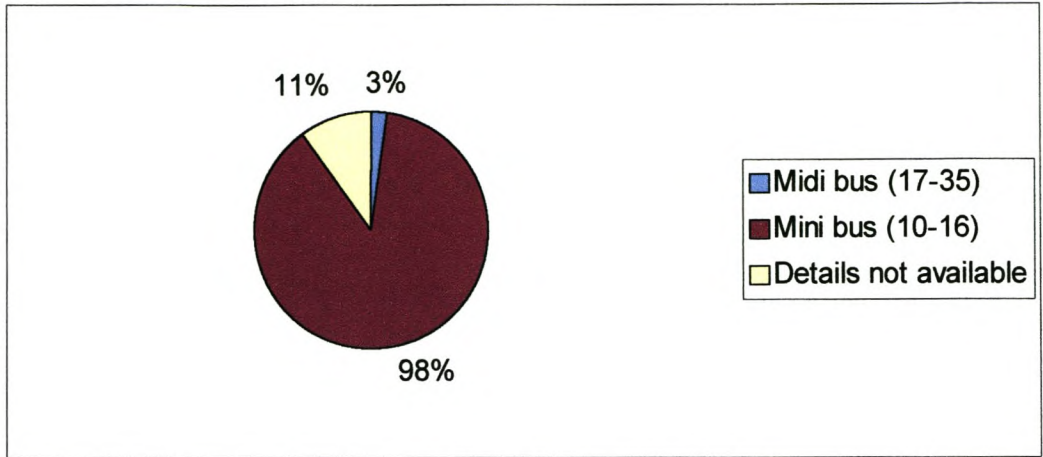


Figure 6.13: Taxi fleet structure

6.6 Operational Experience

6.6.1 Age of Bus Companies

To determine their level of experience with operating a public transport service, bus respondents were asked for the date their company was started.

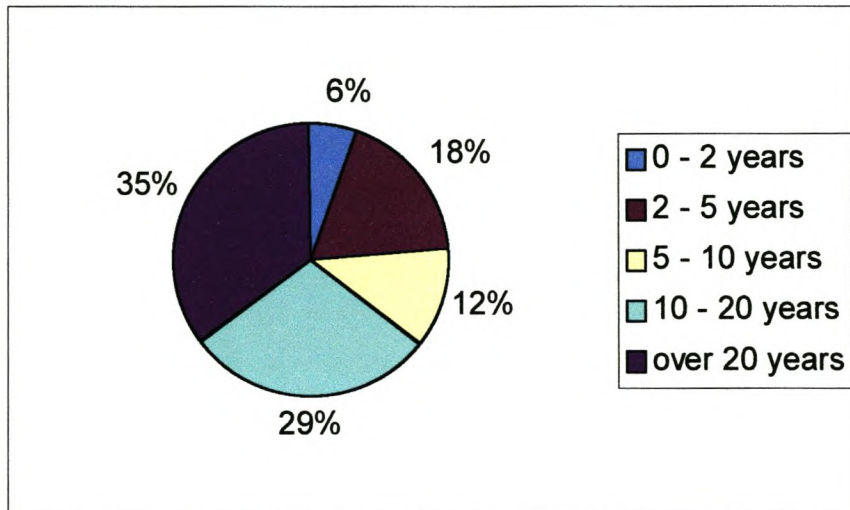


Figure 6.14: Age of bus companies

Five age categories were devised to determine levels of experience. Two years was used as a benchmark for minimal experience. Five years old companies are considered having reasonable experience, ten years considered well experienced and 20 years very well experienced. Six percent of respondents had newly entered the market (were less than two years old) and an amazing 64% were well experienced (over ten years old). See Figure 6.14.

Fairly few operators are just entering the market (over the past two years), which could indicate that older companies are dominant in the market and it could be hard for new operators to establish themselves. Also the lack of profitable routes could be a deterrent to prospective businesses. The market for this service could also be saturated.

The open public tender system could be an ideal solution to this problem and would encourage competition in the market. Existing operators would be open to serve a larger segment of the population and new business would be encouraged.

6.6.2 Vehicle Scheduling Methods

Vehicle scheduling requires calculating required fleet sizes for a certain contract as well as drawing up time tables and allowing for repairs, breakdown as well as spare vehicles.

Respondents were asked whether they used vehicle scheduling and if so, what method they used. This information was used to classify the quality and accuracy of their method used. Experienced-based methods were separated from methods derived from a certified course.

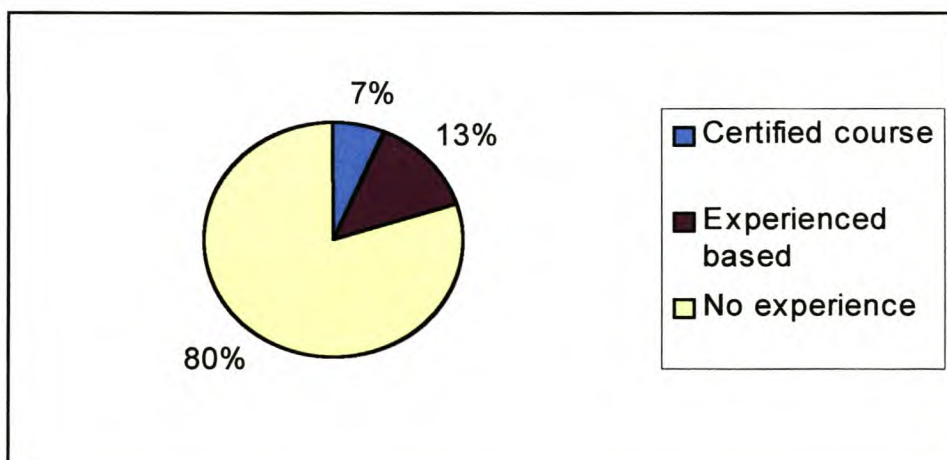


Figure 6.15: Vehicle scheduling methods used by bus operators

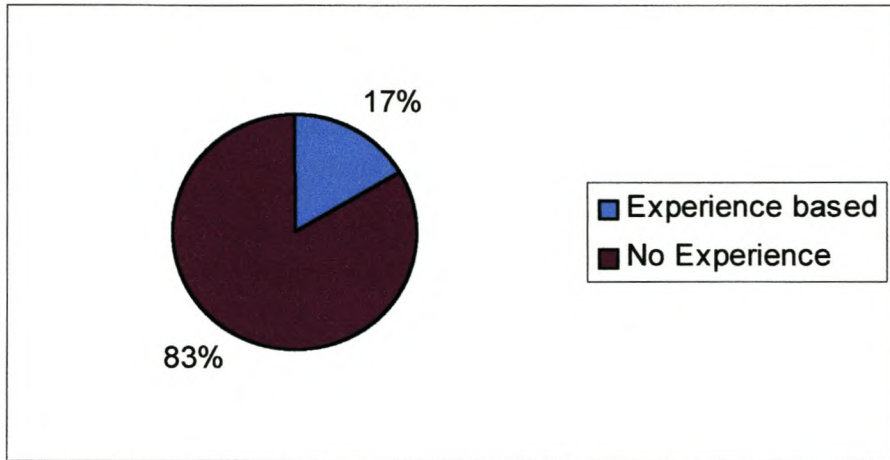


Figure 6.16: Vehicle scheduling methods used by taxi operators

See Figure 6.15 and Figure 6.16. The results showed that only 29% of bus companies surveyed used vehicle-scheduling methods. Of this 29%, one third used methods learnt in a certified course and the rest used their experienced-based methods.

Only 17% of taxi operators used vehicle scheduling and the method used was experience-based.

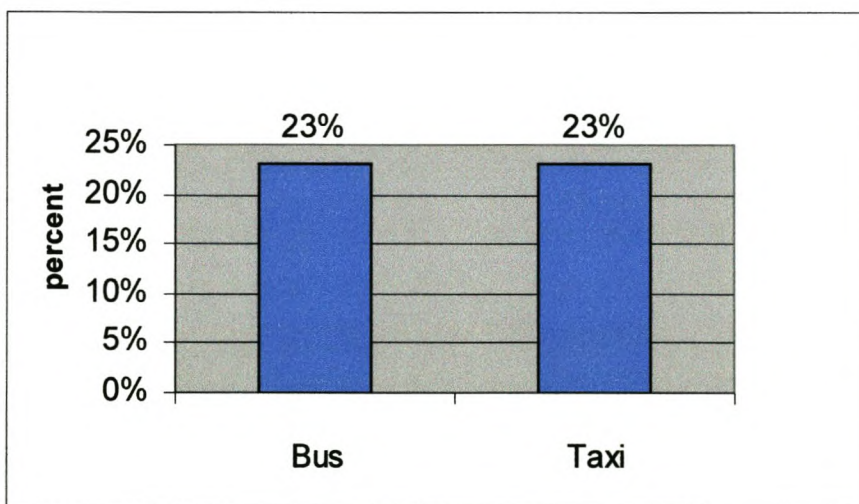


Figure 6.17: Operators who understood scheduling example

To understand their levels of expertise, respondents were given a vehicle-scheduling example and asked if they understood the procedure used. A simple example was used, taken from a "Transport Systems" course held by Dr. van der Voort at Stellenbosch University. 23% of both bus and taxi respondents could follow the example. See Figure 6.17.

Compared to the 29% of bus respondents using Vehicle Scheduling Methods, the example shows that many of their experienced-based methods were not adequate at scheduling a simple fleet operation adequately. It could also indicate that the methods used are different to that considered standard operating practice. Their current methods may be adequate for their current operations, but not necessarily for the operation of a tendered service. The results for bus operators seem to be inconsistent. Operators who admit to have no knowledge of vehicle scheduling are able to follow the procedure (6% of respondents). It may also be the case that many respondents misunderstood what was meant by the term vehicle scheduling.

When scheduling methods are compared with company ages in Table 6.3, the resulting observations are interesting.

Company age In years	Vehicle scheduling technique		
	Certified course	Experience based	No experience
> 20	1	2	2
10 to 20	0	0	4
5 to 10	0	0	2
2 to 5	0	0	3
< 2	0	0	1

Table 6.3: Bus vehicle scheduling technique versus company age

Companies using experience or course-based methods all have more than 20 years of experience in public transport operations and can be considered to be well experienced.

Was a comprehensive costing method used?	Vehicle scheduling technique		
	Certified course	Experience based	No experience
Yes	1	2	6
No	0	0	5

Table 6.4: Bus scheduling techniques versus costing methods

All operators using a certified course or experience-based techniques of vehicle scheduling took all operating costs into account. See Table 6.4. Taxi respondents using experience-based methods also take these costs into account. See Table 6.5.

Was a comprehensive Costing method used?	Vehicle scheduling technique	
	Experience-based	No experience
Yes	2	4
No	0	4

Table 6.5: Taxi scheduling techniques versus costing methods

6.6.3 Operations Costing

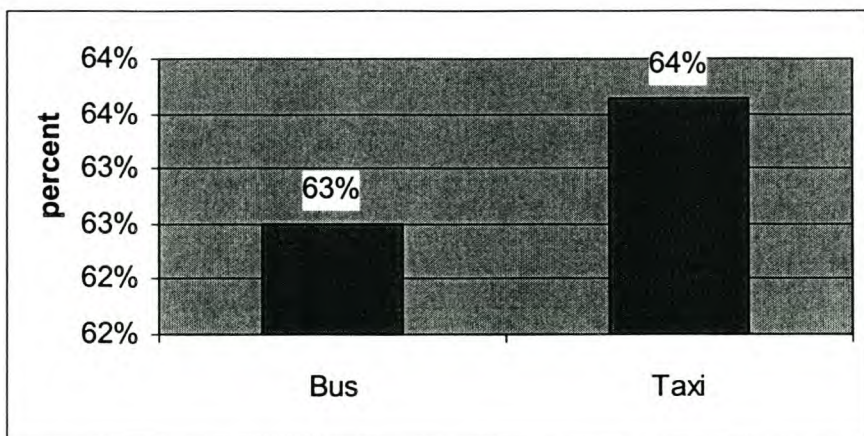


Figure 6.18: Operators taking all operating costs in account

Respondents were given a list of all relevant costs associated with operating a public transport vehicle. When asked if they took these into account when costing their operations, 63% of bus operators said yes. The response of taxi operators was similar (64% said yes). Refer to Figure 6.18.

6.6.4 Operational Record

An operational record gives details of all contracts over a certain period, in this case for a year. It should provide details of fleet structure, routes, timetables, volume of passengers transferred, fares charged, etc.

Operators would be inexperienced in operations required by the new tender system. For this reason, training in new operation procedures would be vital for prospective tenderers. Refer to Figure 6.19.

65% of bus operators were used to keeping operational records for the past year and can therefore be considered to have some experience in this regard.

57% of taxi operators also have experience in this regard.

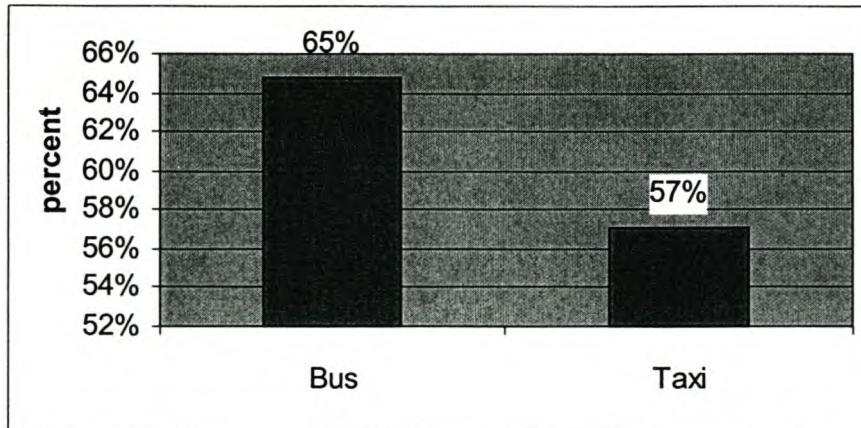


Figure 6.19: Operators who keep operational records

6.7 Employee Structure

6.7.1 In general

The average number of employees per bus company is 16 with a standard deviation of 18. Refer to Appendix E. For taxi companies, the average number of employees drops to 3 with a standard deviation of 2. From this, it is evident that taxi employee numbers are consistently low while for bus companies; numbers vary from extremely low to very high.

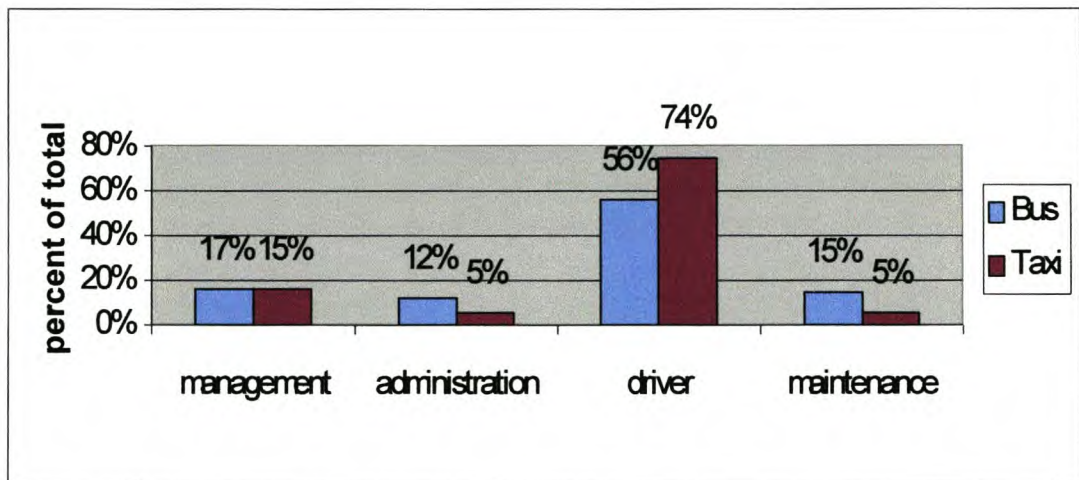


Figure 6.20: Employee structure of bus and taxi companies

See Appendix F. Refer also to Figure 6.20 to compare the employee structures of bus and taxi respondents respectively. Drivers appear to have the larger share of employee numbers for bus and taxi companies, making up 56% and 74% of the labour force respectively.

This trend is more pronounced in the case of taxi companies, which are not regulated. Here administration and management numbers are low as funds are focussed on providing the basic needs of a transport company. Once these companies become more established, their focus will change to improving efficiency in management and operations. This can only be properly explored once a business is well established and has excess funds to maximise their efficiency. Also, incentives need to be provided to ensure that efficiency savings are made desirable.

6.7.2 Education Structure

Transport companies are not well established in that they have no experience at operating a commuter subsidy contract, required by the new tender system. Due to a lack of profitable routes, their businesses have not had the opportunity to grow and expand. Even though some businesses have been in the industry for a number of years, their growth has been constricted in the absence of an open permit system.

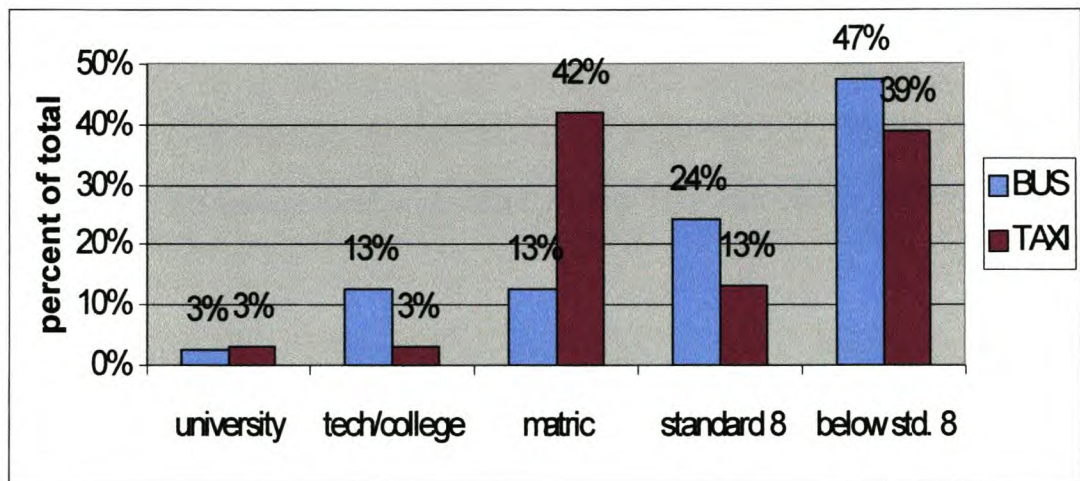


Figure 6.21: Education structure of bus and taxi employees

This is truer for the taxi industry, which has only recently emerged on the public transport scene. As a result, their employees are mostly drivers and unskilled or semi-skilled personnel. Refer to Figure 6.21, which enables a comparison between the education structures of both bus and taxi industries.

Where bus and taxi operators have equally low levels of university education (below 5%), employees in bus companies have a bigger share of technically qualified workers (13%) as opposed to 3% of taxi workers.

The largest proportion (42%) of bus and 39% of taxi employees have below standard 8 (grade 10) education.

6.7.3 Racial Structure

The reconstruction and development programme (RDP) is aimed at ensuring equality and improvement in the workplace. RDP initiatives count for 10% in the tender evaluation criteria.

An important aspect of the RDP is ensuring that Affirmative Action measures are being enforced. Figure 6.22 shows how racial balances differ amongst bus and taxi operators.

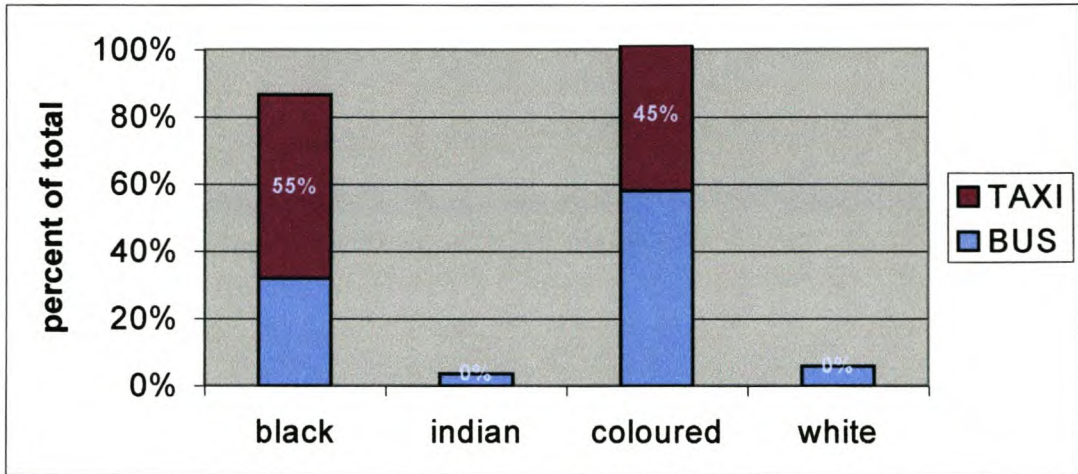


Figure 6.22: Racial structure of bus and taxi employees

In both taxi and bus industries, employees consist mainly of coloured and blacks, which measure favourably with Affirmative Action practice.

Whites and Indians make up 10% of bus and 0% of taxi employee numbers.

The reconstruction and development programme includes employee training and skill development within the company. For this reason training programmes should be focused at employees as well as employers in transportation.

6.7.4 Female Employees

The reason this question was important was its relevance to equality in the workplace, favouring RDP initiatives in this respect.

Females make up 12% of the total bus employees and none of the taxi employees in the sample taken.

Take note that this section was poorly answered by taxi respondents (around 50%) and should not be used as a generalisation in this regard.

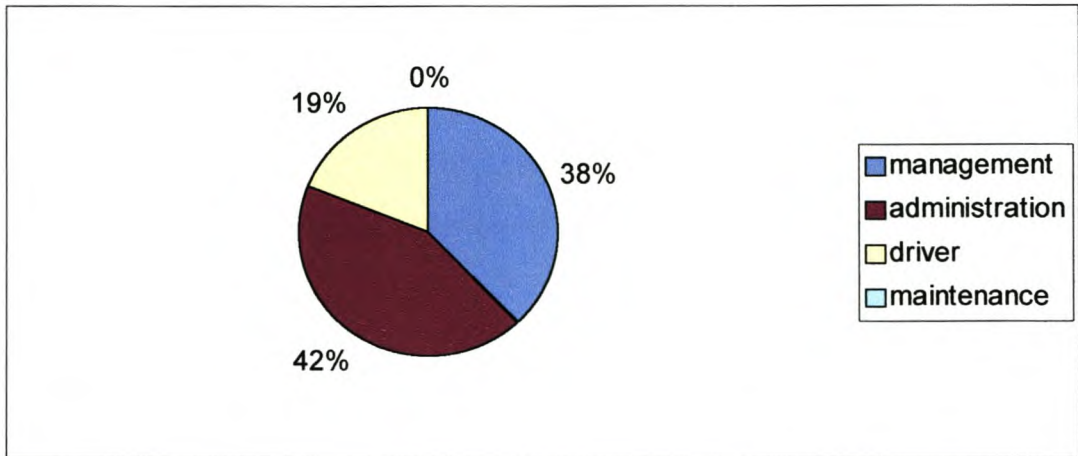


Figure 6.23: Female employee structure for bus companies

Figure 6.23 shows the employee structure of female bus employees. Females are mostly involved in administration (42%) and management (38%). Surprisingly, 19% of female employees are drivers.

6.8 Feedback

6.8.1 Examples of Comments & Suggestions

Many observations were made in this section of the survey. Some interesting remarks were taken from the responses as they had significant bearing on the aims of this study. Although the main issues for bus and taxi operators are similar, their comments have been separated to distinguish between the specific problems for each. The following comments were selected:

6.8.1.1 Bus

"Have to be prepared to be able to tender, but can't start until tender is awarded."

"If smaller vehicles like kombis are allowed to operate freely over the same routes, chances of success will be reduced."

"State to stand security for SMME in first five years."

"The price of new buses should be interest free."

"Training over reasonable period of time required."

"Facilities to be created for vehicles to be rebuilt/refurbished at affordable rates."

"Financial institutions to be made aware of this sector of the community who have been left out in the past due to political reasons."

"That the Provincial Gov. have refresher courses on a regular basis."

"That the existing operator who enjoyed the monopoly over the years to assist SMME's."

"Workshops must be held to educate future tender participants."

6.8.1.2 Taxi

"Insufficient schooling."

"Need financial assistance."

"Intensive workshops needed..."

"No knowledge regarding tendering for routes."

"Taxi industry division, mistrust, absent management and its disadvantage by the subsidy enjoyed by bus, rail and private sector."

"No previous experience."

"Taxis are individually operated and therefore have no great financial backing."

"Individuals can't compete with large companies."

"Vehicle replacement is essential (but be heavily subsidised)."

6.8.2 Main Problems

The main tendering problems were assessed and the number of respondents with these problems noted. Many respondents entered more/less than the three main problems requested. Each issue will therefore be taken as a percentage of the total number of respondents and not actual responses to this question.

Table 6.6 shows the main tender problems envisioned by bus respondents, in order of importance. The taxi response to this question was very poor and bus responses were used as a representation of the whole situation since their tendering problems are similar in nature.

Problem Number	Problem Description	Number of Respondents	<i>Percent of Total</i>
1	Capital needed	10	59%
2	Training in tender costing techniques	9	53%
3	Affordable transport vehicle financing	6	35%
4	Tendering overheads costly	5	29%
5	Taxi operations must be regulated	4	24%
6	Corruption in tender process	3	18%
7	Lack of skilled staff/poor education	2	12%

Table 6.6: Main bus tender problems

6.8.2.1 Capital Requirements

The main problem appeared to be the need for capital, which was of major concern to 59% of tenderers. In general, respondents felt that a capital investment would give them the means to

improve their quality of service to the standards required by the tender. The magnitude of this investment would still need to be worked out.

6.8.2.2 Training

The need for training ranked was the second most important factor amongst respondents. 53% of operators felt that more training in costing techniques were necessary to prepare them for the level of detail required in the tender. Most operators found that the training programs offered at present were inadequate in meeting their needs in terms of tender preparation required.

6.8.2.3 Vehicle Financing

35% felt that affordable vehicle financing was of major concern. Some felt that government should give them the additional vehicles to improve their operations. More realistic solutions were also suggested. Many wanted the provision of interest-free financing to make up for the disadvantages they had suffered previously at the hands of government.

6.8.2.4 Others

Many operators were discouraged by overheads associated with preparing for the tender bid.

Tenderers also felt that the lack of control over the taxi industry would cause problems once tenders had been awarded. They might not be able to implement their services easily because of this.

Due to previous experience, many operators felt that the corruption present could not be rooted out of the contract distribution process. Many were sceptical that the proposed public tender would be fair and equal.

6.9 Summary

More than 10% of the respondents surveyed were not aware of the new tender system, 35% of bus respondents were registered with SACRO and 77% of taxi operators were registered with the Provincial Taxi Registrar.

The average vehicle operating cost for bus operators was lower than the value used by the incumbent operator. Vehicle mileages estimated by SMME bus operators were also lower than those used by the incumbent operator. Minibus taxis had higher vehicle mileages than buses.

About 20% of operators did not pay taxes, more than 12% of their companies were not ring-fenced and at least 30% more taxi operators than bus operators felt that their businesses were financially sustainable. Also 40% more bus than taxi operators could obtain suretyship to the value required by the smallest estimated contract value.

The average fleet age for bus companies was 16 years when allowance is made for age modifications due to rebuilding and rehabilitation of vehicles. The average fleet age for taxis was less reliable due to the degree of estimation required and found to be 8 years.

More taxi than bus employees were involved in driving. Only 6% of bus employees were white and 12% were female. No taxi employees were white or female.

The main tender problems noted by respondents were capital financing and training requirements.

6.10 References

Cape Metropolitan Council ; 1999 ; Moving Ahead: Cape Metropolitan Transport Plan, Part 2: Public Transport Strategic Component, Discussion document ; South Africa.

Duff-Riddell, W.R. ; 1997 ; Minibus Taxi versus Commuter Bus ; GV05 Transportation Systems Assignment ; lectured by Doctor J.Van Der Voort ; *University of Stellenbosch* ; South Africa.

7 DISCUSSION

7.1 Introduction

This chapter focuses on using the results of analysis of the survey. These results are looked at in conjunction with experiences in tendering practice on a global scale. Ideas are formulated by considering this information in the context of the current public transport situation in South Africa and the Western Cape.

The goals of local and national government will also be taken into consideration in this chapter. These goals form the basis of future transport policy with regard to tendering practice.

7.2 General Information

7.2.1 Knowledge of Tender

Once tender documents have been completed, the tenders will be advertised in national newspapers, on community notice boards and the relevant organisations will be informed.

In an interview with Mr. Maluka, the chairperson of the Western Cape branch of SABOA, he mentioned that there are very few bus operators that do not belong to SABOA. The questionnaire survey showed that 77% of taxi operators are registered with the Provincial Taxi Registrar.

If these relevant organisations are informed of the tender once the documents have been completed, their members will be made aware that tenders are being advertised. This would really be useful if operators are informed early enough to allow them to prepare for the tender before it is advertised. Since most SABOA members do not respond well to mailing notices, alternative methods of announcement should be considered.

The QUATTRO document emphasises the use of the transport system as a learning environment. This approach can be used where aspects of tendering are concerned. Different methods of advertising tenders should be considered, using information on best practice in this regard as a basis.

The survey showed that more than 10% of operators were not aware of the tender. A concerted effort should be made to ensure that these operators are properly informed. By informing operators of the aims and objectives of this tender, they would be more understanding and willing to participate in the tendering system.

Every effort should be made that as many operators as possible take part in the tender. This will ensure that the bid is competitive and that transport authorities receive the best service quality at the lowest cost for any given contract.

7.2.2 Contact Details

The number of operators registered with SACRO is very low. Only 35% of the bus operators surveyed and no taxi operators are officially registered with SACRO as companies.

The reasons for this could be linked to the notion that many of these operators do not feel that registration will benefit them in any significant way. They should be better informed of the benefits of joining the registrar to encourage them to reap the benefits of this association.

Having more companies registered will make obtaining company information much easier than it is at present. It will also ensure that all companies are treated fairly in terms of taxing and other important aspects associated with running a business.

7.2.3 Vehicle Operating Costs

Operating costs were calculated for the different models of buses and taxis used in the questionnaire.

Since bus companies also owned midi and mini buses, these estimates were compared with results obtained from taxi operators for the same vehicles. Unfortunately, no taxi operators owned midi buses. As a result, only mini bus estimates could be compared for bus and taxi operators. The averages obtained for operating costs in R/km compared quite favourably for bus and taxi operators whilst the costs in R/h differed substantially between the two groups of respondents.

The estimate of vehicle operating costs calculated for the incumbent operator is higher than the average operating cost of a standard bus in R/km. This figure is much higher if inflation is accounted for and all costs are allowed for in the estimate. These results would suggest to the researcher that perhaps smaller operators are costing their vehicle operating rates at a value lower than it is in reality. Perhaps they are not taking all costs into account when calculating their costs. This would suggest that their costing methods should be upgraded.

Another factor could be that the costs of overheads are lower for smaller operators than for the incumbent operator. Large operators are sometimes at a disadvantage since they are obliged to operate less-profitable services in addition to the economically viable services.

7.2.4 Vehicle Mileage Rates

The average vehicle mileage for smaller vehicles is much smaller than the estimate given by the incumbent operator.

Smaller operators have an average mileage of 880 km/week with a standard deviation of 1220 km/week. The estimate for the incumbent operator is almost 1.4 times this value. Due to the large standard deviation in the result, it shows that there is great variation in the distances travelled by operators in the survey. While most respondents travelled around 300 km/week, one travelled 2700 km/week. The difference would be due to the type of operation operators are offering. Long-distance public transport would result in higher vehicle mileages than short-distance commuter services. Also, many operators could operate infrequent services. Where they have contracts to transport commuters during peak periods only, their mileages would differ depending on the hour of the day and this would not necessarily affect their mileage per week.

The incumbent operator has over 100 years of experience in operating a commuter transport service. The estimate for the incumbent operator can therefore be regarded as a good indication of the vehicle mileage to be expected when operating a scheduled commuter service.

The routes to be tendered have not been changed from the routes currently operated by the incumbent operator. The current mileages used by the incumbent operator are thus a good indication of the mileages to be used when operating a tendered service.

7.3 Legal Issues

7.3.1 Payment of Taxes

Many companies that pay their taxes are at a disadvantage to those who don't in that the latter have lower operating expenses.

The Transport Transition Bill emphasises equability in the funding of public transport by national government. To ensure equability and fairness, all operators should be made to pay company tax.

All companies are already required by law to pay tax, but due to poor enforcement of this law, 18% of bus operators and 23% of taxi operators do not pay taxes. These results were taken from the survey.

Many operators feel that they will no longer be able to make a profit if they should start paying taxes. They should be educated in proper business and operational techniques that will teach them to run a business successfully whilst still paying tax.

Tax concessions for the past will also encourage operators to admit their omission and make a concerted effort to become legal entities. This would also give operators the impression that the authorities are really interested in their welfare and encourage a trusting atmosphere between operators as well as the authorities.

European guidelines dictate that a co-operative situation should be established between authorities and public transport operators. By granting concessions to these operators, this atmosphere of co-operation would be greatly encouraged.

7.4 Financial Issues

7.4.1 Financial Ring-fencing

In the analysis of survey responses, it was found that 88% of bus companies and 83% of taxi companies were financially ring-fenced.

More than 10% of both bus and taxi operators will therefore require guidance to amend their operational and accounting practice in order to be in a position to tender for new routes.

It would appear that slightly more taxi than bus operators have a problem with financial ring-fencing.

According to the incumbent operator, Golden Arrow:

“One of the aims of the tender contract system is to empower small, medium and micro enterprises.”

Knowledge is power. In order to empower these operators, they should be taught the necessary skills to enable them to compete on an equal footing with larger enterprises. Good business and operational skills will form an important part of the empowerment process.

7.4.2 Financial Sustainability

According to the questionnaire study, it is evident that 41% of bus operators and 75% of taxi operators think their businesses are financially sustainable.

It could therefore be true that taxi operators have lower operating costs than bus operators. Whilst minibus taxis usually operate at or slightly below their vehicle capacity, this is not true for buses.

During peak periods, buses and taxis both operate at densities close to or at full capacity. During off-peak periods, this difference is more pronounced. Minibus taxis provide a faster, more frequent service than buses due to their performance characteristics. Since minibuses have a lower capacity than standard buses, their number of passengers do not differ much between peak and off-peak conditions as much as standard buses do. Taxis also have a larger share of the commuter market due to their higher frequency and faster operating speeds in traffic.

7.4.3 Suretyship

As discussed in Chapter 6, 76% of bus operators could obtain suretyship to the value of R100 000. Only 36% of taxi operators could obtain this suretyship value.

The reason for many operators not being able to obtain surety could be partly attributed to the fact that their businesses are relatively small. The average number of buses and taxis per company are 8 and 3 with standard deviations of 10 and 3 respectively.

Although bus and taxi fleets range from a minimum of one vehicle to a maximum of forty in the survey sample, the average fleet size for buses is much bigger than for taxis. The result measures favourably with the fact that more bus operators have businesses with sufficient capital to obtain the surety required by the tender contract.

The study conducted by J.Won identified district co-operatives as the most feasible bus industry structure. By encouraging smaller taxi and bus companies to form co-operatives, they would be able to tender for routes with a larger capital base.

By combining resources, their combined collateral will enable them to secure larger contracts more easily. In terms of suretyship, their combined assets will place them in a much more favourable position to obtain guarantees for the tender. The contracts secured in this manner could then be divided up equitably amongst the members of the co-operative.

7.4.4 Financial Records

29% of bus respondents and 14% of taxi respondents did not keep regular financial records, being unable to provide financial records for the past year of operation.

7.5 Suitability of Vehicle Fleet

7.5.1 Unsuitability of fleet

58% of the taxi fleet was found to be unsuitable due to the vehicle ages exceeding the maximum allowable limit. Only 36% of the total bus fleet were found to be unsuitable to be used in a tender contract.

Studies have shown that there is a negative correlation between the average age of the vehicle fleet and relative efficiency of the transport company. The average age of the bus and taxi fleets could not be determined accurately due to the nature of the questionnaire. The last age category had no upper age limit for both bus and taxi respondents. As a result of this, an average age had to be used for this category of vehicles. For bus respondents, only one response fell into this category. In the case of taxi respondents, a number of responses fell into this upper category, where the average age needed to be estimated.

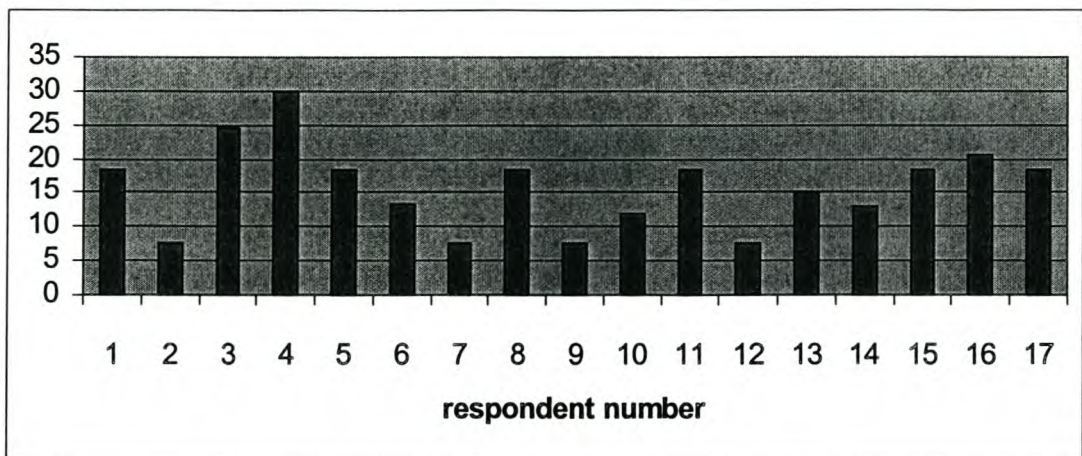


Figure 7.1: Average bus fleet age in years

Thus average fleet ages could be plotted for bus companies in Figure 7.1.

Refer to Appendix G-I:. The average vehicle age was found to be 13 years. Altering the average age for vehicles over 27 years had no effect on this value since only one vehicle was in this category.

The average fleet age was calculated to be 16 years. A study in 1997 shows the average fleet age to be 12 years and a similar study undertaken by SABOA in 1997 gives an average of 12.7 years. The results of the questionnaire study show an increase of at least 3 years from these estimates. This would indicate that the average fleet age is increasing. This could be a due to improvements in vehicle technology to some extent, but would also signify a decline in the quality of the transport system as a whole. The use of older vehicles in the bus fleet would have a negative effect on the system as a whole.

The average fleet age for each taxi respondent is shown in Figure 7.2.

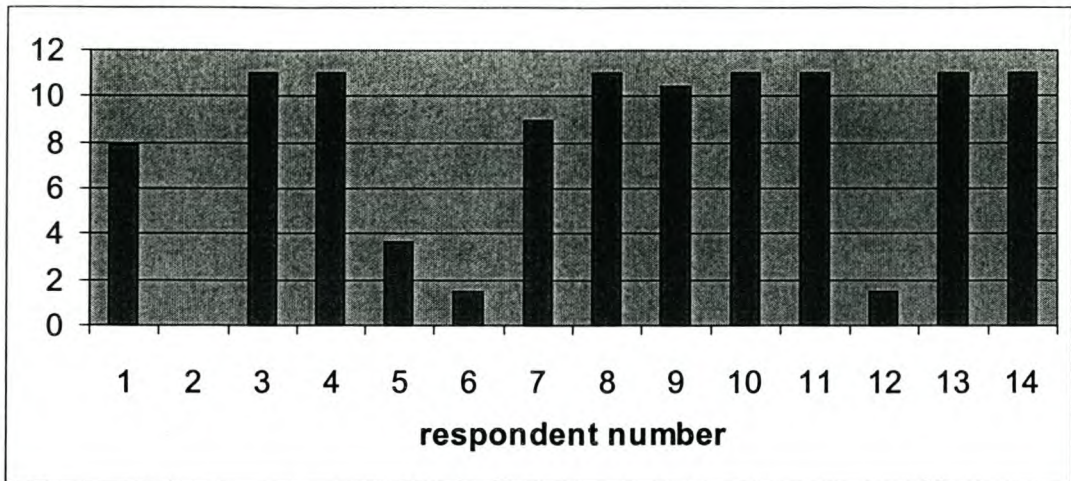


Figure 7.2: Average taxi fleet age in years

Appendix G-II: shows the average taxi fleet age calculation. The average taxi fleet age was more difficult to calculate since a large proportion of taxis were older than 7 years. Taxis over the age of 7 years were given the average age of 11 years for simplicity. The estimates from a SABOA study in 1992 shows that the average age of taxis was 8 years. In the questionnaire study, the average taxi age was found to be 7 years.

If taxis follow the same trend as buses do and have decreasing vehicle ages with time, then our estimate of 11 years' average vehicle age for vehicles over the age of 7 years could be a conservative estimate.

A study conducted in 1997 shows the average taxi fleet age to be 9 years. The average fleet age from this study was calculated to be 8 years. Refer to Appendix G-II: The fleet age appears to be decreasing if our estimates made were accurate.

7.5.2 Vehicle Replacement

The survey showed that although 62% of taxi operators replace their vehicles before seven years of service, about 42% of the total taxi fleet surveyed is under the age of seven years.

This would suggest that either the results are inconsistent with each other or a large number of smaller operators have vehicles under the age of seven years and larger operators have vehicles that are much older. The larger operators would therefore make up a smaller proportion of the total number of operators, whilst making up a larger proportion of the total fleet.

7.5.3 Vehicle Maintenance

From the results of the analysis of survey results, only 8% of taxi operators did not undergo routine maintenance within a six-month period.

Since a certificate of fitness is required for vehicles every six months under the tender contract, at least 8% of the taxi operators would probably not be sufficiently prepared for this. The remaining 92% undergo maintenance work done on these routine maintenance visits might not be sufficient to enable all vehicles to obtain a certificate of fitness.

7.5.4 Fleet Structure

It was found in the questionnaire study that the average number of buses per company was 8 with a standard deviation of 10. The high standard deviation indicates that fleet sizes differed considerably between the operators surveyed.

From SABOA's membership profile in Table 2.1, the average number of buses per company was calculated to be in the range of 1 to 5 buses. 54% of their members have between 1 and 5 buses. 81% of their members are considered "small operators" and have fleets of less than 30 buses.

From the results of the analysis, it was found that 94% of the respondents surveyed had fleets of less than 30 vehicles and could be classed as "small operators" under SABOA's definition. This result is 13% larger than the results taken from the SABOA study. If sampling error can be disregarded, it would appear that non-SABOA members contribute largely to the number of "small" operators in the industry.

The effect of these statistical results for bus operators can therefore not be regarded as negligible and any attempt to further understand the characteristics of bus operators should

include non-SABOA members in the sample. This would enable a holistic understanding of bus operators in the transport environment and result in a reduced statistical sampling bias in the survey.

7.6 Operational Experience

7.6.1 Age of Bus Companies

Only 6% of the bus companies surveyed were fairly inexperienced with less than two years of experience in operating a bus service.

The majority (62%) of operators had more than 10 years of experience in bus operations. This experience cannot be used as a direct indication of the ability of a company to tender under the new tender system.

All operators with the exception of the incumbent operator are fairly new to the commuter subsidy market. It would be expected that companies with more experience in public transport would have well-established business and operational methods.

This is not always the case since newly established companies could be more innovative and make use of new, updated methods of operation. Whilst older companies might have more experience to their advantage, their methods of operation and procedures followed could be outdated and inefficient.

For this reason, experience measured in years could not be considered a comprehensive method of determining tendering ability of a public transport company. Other criteria were established to enable a better understanding of this concept. Vehicle scheduling methods and operating information was also required.

7.6.2 Vehicle Scheduling Methods

The scheduling of all aspects of a public transport company requires many estimations and/or calculations to be carried out. The following need to be calculated / estimated:

- passenger numbers

- passenger frequencies
- route lengths
- average vehicle speeds
- travelling times
- number of stops, etc.

A number of these variables can be easily calculated, whilst variables such as passenger loads and frequencies may change between the time a survey is conducted and the service is in operation.

Due to the multidimensional nature of a vehicle scheduling exercise, this aspect of public transport operations was used as a means of classifying operators. The accuracy of this operation has a major effect on the level of efficiency at which the transport service is operating.

By classifying the method used to schedule vehicle operations, a rough measure of efficiency of operation of each operator can be established.

In the questionnaire study, it was found that 71% of bus operators and 83% of taxi operators did not use a vehicle scheduling method. Only 10% of bus operators used methods obtained from a certified course in bus operations. The rest used experience-based methods.

It was found that all companies using experience-based methods of vehicle scheduling had more than 20 years of experience and also took relevant operating costs into account in their costing procedures.

This would suggest that only companies with more than 20 years of experience in public transport operations are using comprehensive methods of operating their services.

7.6.3 Operations Costing

From the results of the analysis, it was found that 63% of bus operators and 64% of taxi operators used comprehensive operations costing methods.

The industry cost profile provided by SABOA in Figure 2.1 shows the percentage contribution of each operating cost to the total. It is evident that salaries and wages have the largest contribution of 35% and fuel and oil makes up 18% of operating costs of a bus company.

From this information, it is clear that changes in the price of fuel and oil would have a dramatic effect on the operating costs in a bus company. Whilst the price of oil consumed by a vehicle per kilometre is much lower than the price of fuel per kilometre, changes in the price of fuel will have a bigger effect on the overall operating costs than the price of oil.

Changes in the fuel price between January and October 2000 stand at an alarming 44.7%.

This fuel increase results in an increase in operating costs for bus operators and hence higher fares for passengers. A system of fuel subsidies for bus operators would smooth their transition into the commuter subsidy market.

7.6.4 Operational Records

In the study, it was found that 35% of the bus operators surveyed and 43% of taxi operators could not provide operational records for the past year.

The tender document requires that all prospective tenderers provide details of their operations for the past year. If operators cannot satisfactorily provide this information, their tender participation will be severely limited, if not disallowed.

If operators are educated properly in this regard, they will be in a better position to tender. If they were not familiar with vehicle scheduling procedures, many of the estimates required by the operational record would be inaccurate. This could prejudice the integrity of the tender bid submitted by the operator and put him/her at a disadvantage.

In the survey, it was found that 23% of the operators surveyed could not follow a simple vehicle scheduling exercise. These respondents would require training in vehicle scheduling procedures.

7.7 Employee Structure

7.7.1 In General

The largest proportions of employees are drivers, while the smallest proportions are involved in administration.

This trend is common to both bus and taxi companies. The gap between driver and admin is more pronounced in the case of taxi companies with a difference between them of 69%. For bus companies this figure is much smaller, with the gap of 44% between the percent of drivers and employees involved in administration.

Bus companies are also more involved in maintaining their own vehicles. 15% of their total labour force is involved in maintenance, while only 5% of taxi employees do constitute the maintenance crew. There are more buses per company than taxis on average, a value 8 for buses as opposed to 3 for taxis. This could indicate a trend in companies depending on their number of vehicles. The cost of employing a maintenance crew could be offset by the cost savings of maintaining a large vehicle fleet at an expensive vehicle repair garage.

For smaller fleets, keeping a maintenance crew could be expensive when there is not sufficient maintenance work to be done to warrant the additional expense. Using a service garage for repairs could prove to be the cheaper option.

Roughly the same proportions of employees are involved in management for both bus and taxi operators. 17% of bus and 15% of taxi employees are management staff.

7.7.2 Education Structure

Only 3% of bus and taxi employees have a university education whilst 13% of bus and 3% of taxi employees have technikon or college experience.

More taxi than bus operators have a high school education. 49% of taxi and 29% of bus employees in the survey are high school graduates.

47% of bus and 39% of taxi employees do not have a standard eight (grade ten) pass.

The White Paper on National Transport Policy focuses on developing human resources in order to support the goals of the Reconstruction and Development Programme. Workshops in skills training as well as education improvement would be an ideal way of developing human resources in the transport sector.

A continuous programme of personnel training is important. Courses should be run to upgrade the education and skill levels of the employees of these companies on a continuous basis.

If ideas are not regularly enforced and improved upon, the success of training initiatives will prove to be short-lived.

Refer to Appendices 6a and 6b. It is evident that only 38% of bus and no taxi employees involved in management had any tertiary education. This would impact negatively on the productivity of the company since good organisation and management can improve the performance and productivity of a transport enterprise. The converse is also true that bad management and organisation will have a negative impact on performance and productivity.

For bus employees, 27% involved in administration have not passed high school and completed their secondary schooling. 35% of the bus employees involved in management had not completed secondary education. If the management and administration staff of a company is not well skilled, the performance of their operations will not be optimised.

7.7.3 Racial Structure

Of the taxi companies surveyed, they consisted of black and coloured employees only, making up 55% and 45% of the total employees respectively.

Bus employees consisted mostly of coloureds and blacks, making up 58% and 32% of the labour force respectively. 4% of the employees were indian and 6% were white.

These figures measure favourably with affirmative action initiatives required by the RDP, where disadvantaged persons should be uplifted as a means to redressing the legacy of apartheid. In this case, non-whites are disadvantaged under the legacy of apartheid in the past.

Companies that employ a large number of non-whites are considered to favour affirmative action objectives for this reason.

7.7.4 Female Employees

Very few female employees were present in the sample taken. Only 12% of bus employees were female and there were no female taxi employees.

The largest proportion of females was involved in administration. This group accounted for 42% of the total females employed by the bus companies surveyed.

7.8 Feedback

The results for bus and taxi respondents were looked at collectively since they shared the main problems concerned with preparing for the new tender system.

7.8.1 Capital Requirements

This aspect of the tender was of major concern to operators. There were a number of major concerns involving capital required. Some of the important suggestions will be dealt with.

Difficulty in obtaining surety for the contracts could be offset by the state standing security for SMME's in the first five years of contract. Since only 76% of bus and 36% of taxi operators could obtain suretyship to the value of R100 000, this could pose a serious challenge to operators in preparing to tender. Since R100 000 corresponds to the smallest estimated contract value, more than 25% of bus and 64% of taxi operators would not be able to tender at all.

7.8.2 Training

This was the second most important aspect of the tender. Operators wanted more training in costing techniques in particular.

Training of operators and their employees are required on a regular basis to ensure that they are kept up to date with the latest developments in industry. A lack of education of employees is evident in the results of the survey conducted.

Many employees in management positions lacked full secondary schooling and only a small percentage of employees had tertiary education.

A possible solution to this problem would be to provide intensive workshops to address these inadequacies in skill and education levels of public transport operators and their staff.

The transport budget could be utilised in the provision of these workshops as well and/or courses in operations costing and efficiency optimisation. Transport financing should focus largely on the development of resources (in this case human) through education and training. The need for this is addressed in the aims of the RDP initiated by government.

The RDP targets disadvantaged sectors of the population and emphasises issues of upliftment and skills empowerment.

7.8.3 Vehicle Financing

Vehicle financing was the third most important tender problem according to the transport operators surveyed. In the survey conducted, it was found that 36% of the total bus fleet and 58% of the taxi fleet in the sample were considered unsuitable for use in a tendered contract.

These vehicles would require extensive overhaul (in the case of standard and double-decker buses) or replacement to be used in the tender. Vehicle financing is therefore an issue of major concern for prospective tenderers.

Possible solutions to this problem include:

- 1 The cost of new buses should be interest-free for SMME operators. In this case funding by government could be provided on a regular basis. A committee should be appointed to manage these funds and ensure that good investment decisions are made. Part of the money should be set aside for low-interest or interest-free loans and a certain amount invested for future use as funds may be required. To ensure the success of this venture, a certain portion of the transport budget should be set aside for this purpose on an

annual or other basis and a system of monitoring and accountability should be established to ensure fairness and minimise the scope for corruption.

- 2 Facilities should be created to have vehicles rebuilt or rehabilitated at affordable rates. This would only be able to benefit standard and double-decker buses. This would also only be a temporary solution. Vehicles would eventually need to be replaced. This would serve to prolong this inevitability and could allow operators to obtain good contracts and secure financing for the eventual replacement of vehicles. It would be helpful to have a large, non-profit organisation to provide repairs on a small and large scale to SMME operators. This could either be funded by government or, as mentioned in 1, the committee could be delegated this responsibility. This could be easily incorporated into the concept of establishing co-operatives where this type of service could be made available to operators belonging to the co-operative at a small fee or no charge. The small fee would be useful in ensuring that equipment was properly maintained and improvements made possible by this added capital.

7.8.4 Pre-tender Requirements

Many operators felt that they were in a poor position to submit an acceptable tender. Techniques involved in preparing a good tender are difficult enough. Besides this obvious shortcoming of many SMME operators, another difficulty lies in securing funds needed to upgrade vehicles and facilities needed to operate a tendered service without much collateral in the form of fixed assets.

Many operators have very little collateral and have vehicles in desperate need of repair, reworking or replacement. The tender requires that the transport authorities be allowed to inspect the prospective tenderer's vehicles and facilities. If these do not meet the required standards, the operator will not be considered for the tender.

For this reason, prospective tenderers with poor facilities will stand no chance of securing a contract without capital assistance prior to submission of their tender bid. For this reason, a committee should be set up to assist these operators in securing reasonable financing even though they would not be eligible for a loan from a regular financial institution. These operators require additional assistance. They have been disadvantaged in the past as many of

them were forced to suffer under the apartheid system of the past. 44% of the operators surveyed were black, 51% were coloured, 2% were indian and 3% were white. It is evident that large proportions of these operators have been disadvantaged by apartheid since they were non-white.

The Reconstruction and Development Programme has been instituted by government primarily to uplift the disadvantaged. It is the opinion of the researcher that this measure will serve to facilitate this in a direct way. For many years, these smaller operators have been at the mercy of financial institutions or loan sharks, working hard to pay off the high interest rates required by their loans. The system of low interest or interest-free loans will empower these operators and enable them to manage their own funds in an efficient manner, with the help of education-building programmes to aid their development in this capacity.

7.8.5 Fairness

An issue of major concern amongst operators was the issue of fairness in the new tender system. Many operators had experienced corruption and dishonesty in their dealings with the authorities involved in transport contracts in the past. A concerted effort should be made to ensure that the new tender system is in-fact fair and transparent. A system of accountability and monitoring within the tender system would also ensure that corruption is not allowed to flourish.

Tender evaluation guidelines should be clear and explicit and checks should be made to ensure that they are strictly adhered to.

7.8.6 Inter-modal Conflict

There has been a lot of conflict between bus and taxi operators, especially during mid-2000 in the Western Cape region. This has resulted from unregulated competition for routes between these two rival modes of transport. Many of the operators surveyed were understandably concerned about this volatile situation. This has culminated in the shooting of bus drivers and passengers by disgruntled taxi drivers.

The situation appears to have stabilised by the end of the year 2000 and it is hoped that a peaceful agreement could be made to satisfy both taxi and bus operators. The new tender system is being considered to incorporate taxi operators into the commuter subsidy scheme. At present the extent of their involvement will be operating feeder services or sub-contracts to a larger bus company. The challenge at present is in regulating taxi operators, which would be an essential step in facilitating their involvement in the tender. There is an understandable unwillingness due to the added responsibility of paying taxes, driver and vehicle licensing and other requirements that would be enforced by regulation.

It is the opinion of the researcher that regulation is an essential step in integrating taxi operators into the formal sector and facilitating an atmosphere of peace and co-operation between bus and taxi operators in the Western Cape region.

7.9 Optimal Tender System

7.9.1 Optimal Industry Structure

The optimal structure for the transport industry was found to be a system of district co-operatives.

Co-operatives consist of a number of small, privately owned companies, which are generally more efficient and profit-orientated than larger companies.

7.9.2 Fare System

The optimal fare structure was found when public transport fares were priced at marginal-cost. Private car usage should also be priced at higher than marginal costs. Since motorists generally underestimate the cost of private transport, this trend should be taken into account when establishing a benchmark for private transport costs. Private transport pricing is more difficult to regulate than public transport as there is no set fare and costs vary amongst car users. Public transport planners should consider these difficulties when looking for methods of pricing the use of private transport.

These two initiatives will result in a reduction in traffic congestion as well as a reduction in competition in the market. An effect of reduced competition is a reduction in public transport operating costs.

Care should be taken to ensure that fares are set at appropriate and realistic levels, consistent with the aims of restructuring and redistribution.

Marginal pricing of fares optimises the efficiency of the transport system. In cases where RDP factors are of major importance, the pricing of fares should take RDP objectives into account. For example, transport routes in communities who have been unfairly disadvantaged under apartheid have poor transport services and should be more heavily subsidised than other transport routes where this is not the case.

7.9.3 Meeting Operator Needs

Decision-making should be participative and democratic. Transport Authorities should develop a working relationship, co-operative attitude, favouring innovativeness with operators.

The Transport Authority and the service provider should share in the financial risk of the tender specifications and system revenues.

The provision of good route operation surveys by the Transport Authority will improve the accuracy of tender specifications and expected system revenues. It is unfair that the service provider alone should carry the risks that are dependant on the accuracy of this information. This unfair balance of risk is present in the new tender system for the Western Cape Province. Risk sharing force the Transport Authority to work more closely with operators to obtain a good quality service.

Good service should be rewarded and bad service penalised in cash terms, according to the European Commission.

7.9.4 Traffic Data Collection

When funds for a project are low, cost saving measures should be used to obtain a good quality service. Low-cost, efficient surveys should be developed in cases where social or institutional aspects are strategic for success. Metropolitan Transport Authorities are required to conduct surveys of proposed tender routes to be used in the tender document.

7.10 Summary

The transport system should be seen as a learning environment, where current practice is continually updated through experience on a local and international scale.

New methods should be developed to inform prospective tenderers of the tender and prepare them financially and developmentally for the tender.

To ensure that training initiatives are effective, a continuous programme of training and refresher courses should be implemented. Material should also continuously be updated to reflect changes in the market and to incorporate innovative techniques.

The alarmingly high rate of increase in the fuel price is cause for concern since fuel makes up a large proportion of the operational costs for SMME operators.

All companies using experience-based methods of vehicle scheduling had more than 20 years of experience in operating a public transport service and took all relevant operating costs into account in costing their operations.

The average age of bus fleets appear to have increased by at least 3 years from 1997 to 2000. Bus fleets are generally larger than taxi fleets, which make it more economical for them to have a larger proportion of their staff involved in the maintenance of their fleet.

Employees consist mainly of the racial segment of the population considered to be 'disadvantaged' under apartheid rule and decisions made regarding these individuals should be made to reflect this.

8 CONCLUSIONS

8.1 Introduction

This chapter uses inferences contained in the discussion chapter to draw conclusions about the current situation regarding public transport operators in their ability to participate in the new tender system.

Conclusions will be stated in a brief manner. Evidence supporting these conclusions is outlined in more detail in previous chapters and should be referred to if required.

Conclusions will be discussed under descriptive headings, similar to those used in chapter seven, entitled 'Discussion'.

8.2 General Information

8.2.1 Knowledge of Tender

More than 10% of operators are unaware of the new tender system for the public tender of routes.

The method of posting notices used by SABOA has been ineffective in informing tenderers of the new tender system.

The Transport Authorities are not using an effective method to inform prospective tenderers of the upcoming tender.

Operators will require advance notice of the tender to secure financing and institute the changes needed to prepare for their tender bid.

If more operators are given advance warning of the tender, more of them will be in a position to tender. The more operators participating in the tender, the bigger the chances will be of obtaining a competitive bid for the routes being tendered.

8.2.2 Contact Details

Only 35% of the bus operators and none of the taxi operators surveyed were registered with SACRO.

Those that were registered with SACRO were checked using their contact details on the SACRO web site. Of all the respondents registered, no inconsistencies were found in the contact details provided.

If more operators were encouraged to register with SACRO, it would simplify the process of obtaining contact details and would enable research studies in this area to be more comprehensive and efficient.

8.2.3 Vehicle Operating Costs

The estimates obtained from the survey were inconsistent with part of the information derived from other studies. Very few results could therefore be stated with any degree of certainty.

Respondents estimated the costs of operating a standard bus in the year 2000 at a value lower than the estimate given by the incumbent operator for the year 1997. If the difference in overheads do not play a major role in this case, it is likely that small operators are not taking all relevant operating costs into account when costing their operations.

8.2.4 Vehicle Mileage Rates

Vehicle mileages differed considerably between vehicles of the same type and between different types of vehicles.

The mileage given by incumbent operator for a standard bus in the year 1997 is much larger than the average of bus respondents. It can be concluded that the incumbent operator makes more extensive use of the vehicle fleet due, primarily, to the fact that the incumbent operator is able to operate a scheduled bus service.

Smaller operators do not get work regularly and are therefore not able to operate at high mileages.

Taxis are able to operate a more frequent service than buses, as they are able to operate on a number of routes without the inconvenience of obtaining route permits. Taxis therefore have

higher mileages than both small bus operators and the incumbent operator. They operate long distance services as well and this could have an effect on the total distance travelled.

8.3 Legal Issues

8.3.1 Payment of Taxes

Estimated 1/5 of smaller public transport companies is able to evade tax payment. Slightly more taxi operators than bus operators do not pay taxes.

Operators are unwilling to be registered as companies as they do not see the benefits of this association and do not wish to be liable for the payment of outstanding taxes.

Many operators do not believe that they will make a reasonable profit if they are made to pay taxes in addition to their normal expenses.

8.3.2 Financial Ring-fencing

More than 10% of operators will need to change their business procedure to ensure that they are financially ring-fenced.

This cannot be used as an indication of the total number of operators that do not understand the concept of ring-fencing.

8.3.3 Financial Sustainability

In general, taxi operators find their businesses to be financially sustainable more than what bus operators do.

Taxis generally have lower overhead costs and can offer a more frequent service to customers due to their lower capacities than buses.

8.3.4 Suretyship

More than twice the number of bus operators can obtain a minimum level of suretyship than taxi operators.

Bus operators generally have more capital-intensive operations than taxi operators do.

The formation of co-operatives enables SMMEs to tender collectively, with more collateral to provide suretyship for larger contracts.

8.3.5 Financial Records

More than double the number of bus operators than taxi operators are able to provide financial records for the past year of operation.

8.4 Suitability of Vehicle Fleet

8.4.1 Unsuitability of Fleet

About 1.6 times more of the total taxi fleet was unsuitable than the total bus fleet.

Relative efficiency of the transport company decreases with average age of the vehicle fleet.

Smaller bus operators tend to have higher fleet ages than what larger bus companies do. It would appear that smaller bus operators are not able to replace their vehicles as regularly as what larger operators are able to.

This trend is not evident in taxi companies.

8.4.2 Vehicle Replacement

For taxi operators, the trend is opposite to that for bus operators regarding vehicle replacement.

If the results obtained were conclusive, it would appear that taxi operators with large fleets have higher fleet ages than taxi operators with smaller fleets do.

8.4.3 Vehicle Maintenance

Prospective tenderers will have to ensure that the maintenance done on their vehicles will guarantee them certificates of fitness for their fleet, required on commencement of the contract and every six months thereafter.

8.4.4 Fleet Structure

Bus operators have larger, more variable fleet sizes than taxi operators.

Non-SABOA members constitute a large percentage of the “small operators” in the industry. “Small operators” have fewer than 30 vehicles in their fleet.

Operators with a fleet containing a range of vehicles of different capacities are able to provide a more flexible transport service than those with vehicles of a single capacity only.

8.5 Operational Experience

8.5.1 Age of Bus Companies

The majority of bus companies have more than 10 years of experience in bus operations.

There are very few “new” bus companies with less than two years of experience in the bus industry.

8.5.2 Vehicle Scheduling Methods

Companies with more than 20 years of experience took relevant operating costs into account and used experience-based methods of vehicle scheduling.

Very few operators used certified methods of vehicle scheduling.

8.5.3 Operations Costing

More than 35% of operators do not take all relevant costs into account when calculating vehicle-operating costs.

Fuel and oil make up the largest share of operating costs after salaries and wages are accounted for. The fuel price has increased by more than 40% in less than a year in the Western Cape Province.

Continuous fuel increases will have a drastic effect on the ability of public transport operators to tender and operate their services with a reasonable profit margin.

8.5.4 Operational Record

Close to half of all operators did not keep detailed operational records for the previous year of service.

8.6 Employee Structure

8.6.1 In General

For bus companies, the numbers of employees are much greater than those for taxi companies and are more variable.

Drivers make up more than 50% of the labour force. Drivers constitute more of the taxi employee share than that of bus employees.

Taxi companies have fewer administrative and managerial staff than bus companies do.

Bus companies have more maintenance staff than taxis do to maintain their larger fleet sizes.

8.6.2 Education Structure

More taxi than bus employees have completed their secondary schooling. More bus than taxi employees have tertiary education.

Very few management staff has tertiary qualifications. Many have not completed secondary schooling.

8.6.3 Racial Structure

Only 6% of bus employees and no taxi employees are white. Most of the staff and owners of transport companies can therefore be described as being 'disadvantaged' under the racist laws of apartheid. This gives these operators more benefits in terms of the principles outlined in the RDP instituted by national government.

8.6.4 Female Employees

There were very few female employees, most of which were involved in administration.

8.7 Feedback

8.7.1 Capital Requirements

In order to prepare their operations for the tender, financial assistance would be required.

Small operators make up more than 90% of the prospective tenderers. They have very little collateral and would require assistance in obtaining suretyship for the tender.

8.7.2 Training

Many employees in management positions have insufficient schooling. Effective management and organisation plays a major role in the efficiency of operation of a transport company.

Training should focus on basic education and skills development in a public transport context.

A continuous programme of personnel and operator training would be effective in giving SMMEs the skills they need to be able to provide a more efficient public transport service.

8.7.3 Vehicle Financing

Large proportions of bus and taxi fleets are considered to be unsuitable for use in a tendered contract. These operators would require funding to rebuild, rehabilitate or replace a large percentage of their vehicle fleet.

They have very little collateral to obtain financing. Loans are high-interest and this would give them little chance of preparing a competitive bid with this added expense.

Fuel prices are high as well as the cost of repairs, rebuilding and rehabilitation of vehicles.

8.7.4 Pre-tender Requirements

Many operators would be unable to tender without the provision of financing as well as the training needed to manage their operations well.

If few operators were unable to participate in the bid, the chances of obtaining a competitive bid price for the contract would have to be compromised.

8.7.5 Fairness

Many operators are concerned about the fairness in the new tender system.

Discrimination has been allowed to flourish in the past under the auspices of apartheid. Many operators feel that the legacy of apartheid has not been erased and that discrimination still exists in the transport industry at present.

8.7.6 Inter-modal Conflict

Many bus operators are concerned about the competition between bus and taxi modes for routes as well as inter-modal violence.

Many taxi operators feel that they are being unfairly excluded from the subsidy system bus operators are allowed to benefit from.

8.8 Optimal Tender System

8.8.1 Optimal Tender System

The system of co-operatives was found to be efficient and profit-oriented due to many smaller companies being involved as opposed to few larger companies.

Smaller companies are able to pool resources and have more collateral available for financing to upgrade their levels of service. They are also able to share the use of resources such as maintenance facilities at lower costs than they would otherwise be faced with.

8.8.2 Fare System

Marginal cost pricing of fares is an efficient system of pricing public transport. It results in lower levels of congestion as well as optimising the public transport market share.

In areas where communities have been disadvantaged, lower fares are recommended to redress the imbalances of the past.

8.8.3 Meeting Operator Needs

An attitude of co-operation and encouraging innovativeness is encouraged amongst transport authorities as well as the service providers (operators).

8.8.4 Traffic Data Collection

New, innovative surveying methods are encouraged to reduce costs in situations where social and institutional aspects are strategic for success.

8.9 Summary

The method used at present to inform operators of the tender has proven to be ineffective. Respondents registered with SACRO provided information consistent with details available from the SACRO web site.

Operators who wish to form a co-operative will have more collateral available to obtain suretyship on a collective basis.

A large proportion of bus and taxi fleets require replacement, rehabilitation or rebuilding, as they are unsuitable due to age for tender requirements. This is an important consideration since the efficiency of a transport company decreases with average fleet age.

Bus operators with large fleets have lower average fleet ages than operators with smaller fleets do. The opposite is true for taxi operators.

Only 2% of bus companies have less than 2 years of experience.

Fuel increases have a large effect on the profit margin of SMME operators.

Small operators make up more than 90% prospective tenderers, with fleet sizes of less than 30 vehicles.

Many operators will be unable to tender without pre-tender assistance in terms of financing and training. Ineffective monitoring of fairness will compromise the integrity of the tender.

9 RECOMMENDATIONS

9.1 Introduction

Recommendations have been established making use of the conclusions of the study in chapter 8 as well as useful strategies contained in the literature review in chapter 2. The headings used to group these recommendations are called 'Education & Training', 'Institutional Changes' and 'Further Research'.

The recommendations stated in this chapter are the most useful solutions to the problems contained in this study in the opinion of the researcher with the information made available.

These guidelines could be further fine-tuned using the results of additional studies that would be essential to the continuous understanding of the problem. These suggested research areas would be mentioned in this chapter under the heading 'further research'.

A system whereby the tender process is continuously upgraded in the light of further research will culminate in a transport system that is truly efficient in every aspect, equitable and fully endorsed by the service providers as well as the community served.

9.2 Education & Training

9.2.1 Training in Public Transport Operations

1. Operators should be trained in compiling regular operational records required by the tender board for their operations before the tender to show their previous experience as well as during their operation of the tendered service if they prove to be successful in their bid.
2. Operators should be taught how to use certified vehicle scheduling techniques taught by many universities and colleges. Their experience-based methods might have been sufficient for their operations in the past, but a more comprehensive method would be required in ensuring that they are able to prepare a successful tender bid that is able to compete with other highly skilled operators.
3. In general, operators tend to neglect certain costs when calculating the cost of operating their vehicles. They should be taught comprehensive methods for costing their operations and hence allowing them to obtain more reliable estimates to use in their bid costs.

4. Incumbent operators should make general information available that would not compromise the confidentiality of their bid. Vehicle operating rates and mileages would allow SMME operators to estimate the vehicle financing they would require to prepare for the tender as well as how they should adjust their fleet requirements to tender for certain routes. It is unfair to SMME operators if only the incumbent operator is in possession of information that would benefit all tenderers to a large extent.

9.2.2 Training in Business Practice

1. Many operators require training in financial sustainability. More bus than taxi operators require assistance in this regard. Many operators might not even fully understand this concept.
2. Both bus and taxi operators require training in operating a business that is financially ring-fenced. At least ten percent of operators have operations that do not meet the requirements of a financially ring-fenced business.
3. Operators would also require assistance in preparing regular financial records. Training in using the good accounting procedures would also be required.

9.2.3 General Education Programmes

1. Both operators and their personnel should be given the option of enrolling for secondary or tertiary education programmes. These could be highly subsidised by the government and partly by the company involved, depending on budgetary constraints.
2. Where minimal education is required in the case of unskilled labourers, courses should be designed to supplement their basic skills in terms of language, financial and job-improvement subjects to improve their job performance.
3. Employees that show enthusiasm and wish to study further should be given this option and funded either through bursaries or low-interest loans. The type of funding would depend on budgetary constraints.

9.3 Institutional Changes

9.3.1 Public Transport Authority (MTA)

1. This body should be required to deal with the issues involving the regulation of all public transport operators.

2. A substantial portion of the budget received from government should be used for developing public transport.
3. Part of this budget should be allocated to the subsidy requirements needed for the new tender system.
4. This budget should be used partly to fund low-interest or interest-free loans to public transport operators depending on need and current as well as past performance criteria.
5. A committee consisting of public transport operators, transportation engineers, etc. should be appointed to make decisions and manage the necessary funds.
6. The MTA could oversee this committee and make sure that funds are being allocated correctly and that the decisions made comply with the overarching goals and objectives laid out by the MTA.
7. The MTA will therefore not need to be concerned with every financing decision to be made by this committee.
8. The records should be regularly audited and operations closely monitored to ensure that personal biases as well as corruption are effectively neutralised.
9. This committee would be in possession of the full details of every public transport company. They will hence be able to make decisions regarding operations while in possession of information relating to virtually every aspect of the public transport system.

9.3.2 Fare Pricing

Public transport fares should be set at the marginal cost of public transport. Measures should be investigated to ensure that private transport costs are set at a level that is higher than marginal cost. Since this cost is perceived as lower than it actually is by motorists, the cost should be established whereby it is perceived by motorists to be marginal cost, even though it may be higher than the

actual marginal cost. This will encourage more motorists to switch to public transport and enable a modal split in favour of public transport.

On routes where communities have been disadvantaged, fares should be more heavily subsidised to ensure that fares are priced equitably and reasonably to facilitate the aims of reconstruction and development.

9.3.3 Industry Structure

The formation of co-operatives amongst SMME public transport operators should be encouraged. This will enable them to pool their resources and tender for contracts collectively, with a larger base for collateral. Obtaining suretyship would be simplified in this manner.

A drawback of this situation could present itself when trying to build trust between operators, who have been operating in an environment of mistrust for a long time.

It would be a challenge for decision-makers to ensure that corruption is completely rooted out of the tender system and that fairness is evident in every way.

9.4 Further Research

There are opportunities for further research in the following areas:

1. Developing methods of surveying that are cost-effective, while not compromising too much on efficiency and accuracy.
2. A survey into the types of institutional structure public transport operators would prefer.
3. A survey into the how transport users would rate the different alternative structures in terms of the user benefits and disadvantages associated with each alternative.
4. Investigating the possibility of allocating part of the transport budget to the empowerment of disadvantaged public transport operators and setting up a committee to manage these funds, with the option of low-interest or interest-free loans to allow these operators to invest in capital in preparation for the tender contracts.

9.5 Summary

Education and training programmes should include a series of courses involving public transport operations, business and accounting procedures as well as secondary and tertiary education of both employers as well as employees. In cases where employers cannot finance these training programmes, bursaries and/or low-interest funding should be arranged. Training programmes should consist of regular refresher courses to be held prior to the tender as well as on a regular basis thereafter. The content of these courses should be regularly updated to reflect the changing needs of operator skills.

A single governing body should be established to deal with all decisions regarding public transport. The body should receive funding from government and provide low-interest or interest free financing and subsidies for public transport operators.

Public transport as well as private transport should be priced at marginal cost.

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Appendix A

A-I: Definition of a rebuilt bus

“Rebuilt bus” means that the minimum standards as laid down by the latest SABS requirements and /or the Road Traffic Regulations are met in each and every instance and that a Road Worthy certificate is mandatory for each bus to be used:

(i) **Body**

- (a) body structure to be stripped and all rust to be removed;
- (b) damaged panels to be replaced;
- (c) broken windows and window screens to be replaced;
- (d) GRP sections to be replaced where necessary;
- (e) all loose panels to be replaced;
- (f) saloon floor to be replaced where unsound;
- (g) floor bearers to be sound;
- (h) floor covering to be sound with no patches;
- (i) step height must conform to the Road Traffic Regulations;
- (j) steps to be sound and fitted with non-slip surfaces;
- (k) seats to be secure and free from cracks and breaks;
- (l) seat trim to be free from tears and cuts;
- (m) engine bonnets to be secure and correctly fitted;
- (n) locker doors and flaps to be secure and correctly fitted;
- (o) route indicator to be fitted and in working order.

(ii) **Electrical**

- (a) all electrical wiring to be replaced;
- (b) batteries to be proper working order;
- (c) all exterior lights to be in proper working order;
- (d) all interior lights to be in proper working order;
- (e) all passenger bells to be in proper working order.

(iii) **Mechanical**

- (a) Chassis cracks are not permitted;
- (b) all chassis components are to be reworked or replaced to the OEM specification;
- (c) all axle components are to be reworked or replaced to the OEM specification;
- (d) all drive train components are to be reworked or replaced to the OEM specification;
- (e) all steering components are to be reworked or replaced to the OEM specification;
- (f) all tyres are to be matched;
- (g) any fuel and /or oil leaks are not permitted;
- (h) all brakes are to be in proper working order;
- (l) all springs are to be in proper working order.

A-II: Definition of a rehabilitated bus

“Rehabilitated bus” means that the minimum standards as laid down by the latest SABS requirements and /or the Road Traffic Regulations are met in each and every instance and that a Road Worthy certificate is mandatory for each bus to be used:

(i) **Body**

- (a) body structure to be stripped and all rust to be removed;
- (b) damaged panels to be repaired;
- (c) broken windows and window screens to be repaired;
- (d) GRP sections to be repaired where necessary;
- (e) all loose panels to be repaired;
- (f) saloon floor to be repaired;
- (g) floor bearers to be sound;
- (h) floor covering to be sound with no patches;
- (i) step height must conform to the Road Traffic Regulations;
- (j) steps to be sound and fitted with non-slip surfaces;
- (k) seats to be secure and free from cracks and breaks;
- (l) seat trim to be free from tears and cuts;
- (m) engine bonnets to be secure and correctly fitted;
- (n) locker doors and flaps to be secure and correctly fitted;
- (o) route indicator to be fitted and in working order.

(ii) **Electrical**

- (a) all electrical wiring to be repaired
- (b) batteries to be proper working order
- (c) all exterior lights to be in proper working order
- (d) all interior lights to be in proper working order
- (e) all passenger bells to be in proper working order

(iii) **Mechanical**

- (a) Chassis cracks are not permitted;
- (b) all chassis components are to be repaired;
- (c) all axle components are to be repaired;
- (d) all drive train components are to be repaired;
- (e) all steering components are to be repaired;
- (f) all tyres are to be matched;
- (g) no fuel and /or oil leaks are not permitted;
- (h) all brakes are to be in proper working order;
- (i) all springs are to be in proper working order.

Appendix B

B-I: Questionnaire for bus operations

This questionnaire forms part of a Masters' Thesis in Transportation Engineering at the University of Stellenbosch funded by the Institute for Transport Technology.

THE PURPOSE: to understand the main problems facing private bus/taxi operators and to recommend measures to assist in their preparation for the upcoming tendering process.

DISCLOSURE: All information collected from this survey is completely confidential and will be used exclusively for research purposes.

CONTENTS: This document should contain the following:

1. Questions 1 to 12
2. Appendices 1 to 3

Submit completed questionnaires to: **THE TRANSPORTATION SURVEY**
P.O.Box 2022, Cape Town, 8000

Additional Assistance If additional assistance is required, please contact **Jamiela Jakoet** by phone or e-mail to discuss problems or arrange a meeting.

E-mail: jakoet@ing.sun.ac.za

Phone: (021) 423-5549

Cell-phone: 082 469 7102

Questions

Please Note: All questions containing the word “you” in this document refers to the company as a whole and not the person filling in the questionnaire.

1. The government is placing a number of bus routes up for public tender over the next few years. Were you aware of this?

YES	NO
-----	----

2. Tenderers are normally required to obtain suretyship. Suretyship is a guarantee in the form of cash and/or fixed assets. Do you have cash or fixed assets to the value of R100 000?

YES	NO
-----	----

3. Does your public transport business operate separately from all other companies/entities (Is it Ring Fenced) ?

YES	NO
-----	----

4. Is your business **financially sustainable**? (Do you make a profit when allowing for the cost of replacing vehicles, maintenance costs and having spare vehicles.)

YES	NO
-----	----

5. Can you provide a financial record for the last year?

YES	NO
-----	----

6. Can you provide an operational record for the last year?

YES	NO
-----	----

7. Please fill in the number of vehicles in the table provided:

(PLEASE DO NOT WRITE IN SHADED AREAS.)

Actual age of chassy*		0 – 15yrs	15 - 22yrs	22 – 27yrs	over 27yrs
Total number of vehicles					
Bus type	Capacity				
Articulated	102-184				
Double-decker	80-110				
Standard	58-101				
Medium	36-57				
Midi	17-35				
Mini	10-16				
Number rehabilitated**					
Number rebuilt***					

* The date of first registration of the chassis of the vehicle.

** Refer to **Appendix 1** for definition.

*** Refer to **Appendix 1** for definition.

8. Refer to **Appendix 1**. This is an extract from the model tender document for bus/taxi operations. It contains the specifications for rebuilt and rehabilitated buses. Do your rebuilt and rehabilitated buses meet these requirements?

YES	NO
-----	----

If **NO**, please explain further:.....

9. Please fill in the rates at which your vehicle/(s) operate:

Bus type	Capacity	Rands/km	Rands/hr	km/week	hours/week
Articulated	102-184				
Double-decker	80-110				
Standard	58-101				
Medium	36-57				
Midi	17-35				
Mini	10-16				

10. Refer to **Appendix 2**. Do you take these costs into account when calculating the cost of operating your vehicles? .

YES	NO
-----	----

11. Refer to **Appendix 3**. This is an example of calculating a vehicle’s operating cost per km. This was taken from the Vehicle Freight Association. This will apply to buses if “payload” is replaced with passengers.

12. Vehicle scheduling involves calculating bus fleet sizes, bus time-tables, etc. Do you have any experience with vehicle scheduling?

YES	NO
-----	----

IF YES, what method/(s) do you use?:.....

13. Refer to **Appendix 4**. This shows an example of a bus scheduling exercise. Are you familiar with the procedure?

YES	NO
-----	----

14. When filling in the following table, note that it is necessary to consider race and gender when establishing equality at work. All information obtained is strictly confidential. (Include owner/proprietors as part of management).

(Please **DO NOT** write in shaded areas.)

Employee type	management	admin.	driver	maintenance
1.Total number				
2.Female				
3.Race: black				
indian				
coloured				
white				
4.Level of education				
University				
tech/college				
Matric				
standard 8				
below std.8				

18 Feedback:

18.1 In your opinion, what are the **three** most important problems facing bus operators in preparing for tender participation? :

1.....
.....
.....

2.....
.....
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3.....
.....
.....

18.2 Comments and suggestions:

.....
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.....

Appendix #1: Extract from Model Tender Document

See Appendix A, Page 135

Appendix #2: Vehicle Cost Schedule

VEHICLE TYPE:	
Capacity	number of passengers
Cost Price. (excl.VAT)	R
Finance cost of capital	%
Monthly repayment	R
Depreciation time	yrs
Depreciation distance	km
Residual value	R
Insurance as % of cost price	%
Tare	kg
Licence	R
Tyre size and ply	
Number of tyres excluding spare	no.
Price of new tyre excl.VAT	R
Price of retread tyre excl.VAT	R
New tyre life : front	km
New tyre life : rear	km
Number of retreads : front	no.
Number of retreads : rear. See Note	no.
Retread tyre life : front	km
Retread tyre life : rear	km
DRIVERS	
Number of drivers	no.
Monthly remuneration	R
ASSISTANTS	
Number of assistants	no.
Monthly remuneration	R
OVERHEADS	
Annual cost	R
% of fixed cost	%
MAINTENANCE	
% of fixed cost.(Fixed maintenance.)	%
% of running cost	%
cpk running cost	cpk
FUEL	
Consumption	l/100km
Price in cents per litre	c/l
LUBRICANTS	
% of fuel	%
Sundrv	
Other variable running costs	cok
Annual kilometres	km
Days worked per annum	days
chargeable hours per work day	hrs

Note: Number of retreads = number of times that the casings can be retreaded.

VEHICLE COST SCHEDULE		
Vehicle type:	Interlink combination, drop side.	
Payload		36000
Prime mover or rigids :		
Cost Price (excl.VAT)	R	R 523,000.00
Finance cost of capital	%	19.80%
Monthly repayment	R	R0.00
Depreciation time	yrs	5
Depreciation distance	km	0
Residual value	R	25.00%
Insurance as % of cost price	%	7.50%
Tare	kg	9200
Licence	R	3430
Tyre size and ply		1100R20 16
Number of tyres excluding spare	no.	10
Price of new tyre excl.VAT	R	R 2,459.00
Price of retread tyre excl.VAT	R	R 511.00
New tyre life : front	km	40000
New tyre life : rear	km	60000
Number of retreads : front	no.	0
Number of retreads : rear. (Note 8)	no.	2
Retread tyre life : front	km	40000
Retread tyre life : rear	km	60000
Number of steering axles	no.	1
Trailers or semi's:		
Cost Price (excl.VAT)	R	R 152,360.00
Finance cost of capital	%	19.80%
Monthly repayment	R	0
Depreciation time	yrs	10
Residual value	R	0
Insurance as % of cost price	%	5.00%
Tare 1	kg	6500
Licence	R	1806
Tare 2	kg	5600
Licence	R	1476
Tyre size and ply		1100R20 16
Number of tyres excluding spare	no.	16
Price of new tyre excl.VAT	R	2459
Price of retread tyre excl.VAT	R	511
New tyre life	km	100000
Number of retreads. (Note 9.)	no.	2
Retread tyre life	km	100000
Number of axles	no.	4
Drivers		
Number of drivers	no.	1
Monthly remuneration	R	R 6,335.00
Assistants		
Number of assistants	no.	1
Monthly remuneration	R	R 2,145.00
Overheads		
Annual cost	R	0
% of fixed cost	%	10.80%
Maintenance		
% of fixed cost.(Fixed maintenance)	%	7.30%
% of running cost	%	21.30%
cpk running cost	cpk	0
Fuel		
Consumption	l/100km	63
Price in cents per litre	¢/l	204
Lubricants		
% of fuel	%	5.00%
Sundry		
Other variable running costs	cpk	0
Annual kilometres	km	140000
Days worked per annum	days	225
chargeable hours per work day	hrs	12

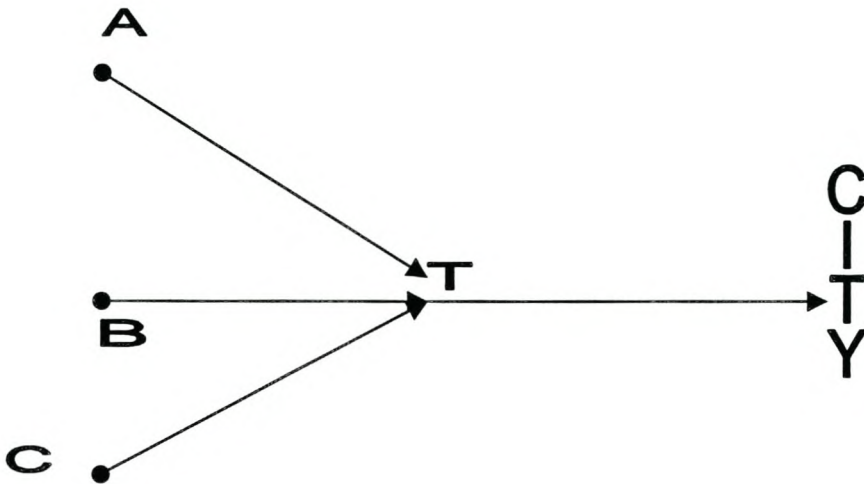
ANNUAL FIXED (STANDING) COSTS	R	c/km	%	%
Cost of capital (Finance) (Note 1.)	R66,860.64	47.76	17.88%	9.51%
Depreciation. (Note 2.)	R84,833.80	60.60	22.69%	12.07%
Insurance	R46,843.00	33.46	12.53%	6.87%
On vehicle staff	#####	72.69	27.21%	14.48%
Overheads. (Note 3.)	R39,638.22	28.31	10.60%	5.64%
Licence	R 8,712.00	4.79	1.79%	0.96%
Fixed maintenance. (Note 4.)	R27,298.02	19.50	7.30%	3.88%
TOTAL ANNUAL FIXED COSTS	#####	267.19	100.00%	53.21%
VARIABLE (RUNNING) COSTS				
	R	c/km	%	%
Fuel	#####	128.52	54.72%	25.60%
Lubricants. (Note 6.)	R 8,996.40	6.43	2.74%	1.28%
Maintenance. (Note 5.)	R70,038.95	50.03	21.30%	9.97%
Tyres. (Note 7.)	R69,858.00	49.90	21.24%	9.94%
Other	R -	0.00	0.00%	0.00%
TOTAL VARIABLE COSTS	#####	234.87	100.00%	48.79%
TOTAL ANNUAL COSTS	#####	501.98		
TIME UTILISATION				
Total number of hours worked p.a.		2700		
Fixed cost per day	R 1,661.98			
Fixed cost per hour	R 138.50			
COST PER km	R	5.02		

Notes:	
1	Based on 0.5 x Cost Price x Interest rate. Estimates average interest component of monthly payments over 60 months.
2	Initial cost - Residual value - 1full set of new tyres.
3	An iterative calculation. Includes for rents, admin staff and other associated expenses.
4	An iterative calculation. Includes time based maintenance such as associated with CoF Inspections.
5	An iterative calculation. Estimates maintenance costs associated with distance travelled.
6	Based on fuel consumption.
7	See Tyre Calculation table.
8	Number of wheel groups with retreads.
9	Number of wheel groups, per trailer, with retreads?

Appendix #4: Vehicle Scheduling tutorial.

PROBLEM:

There are three bus services running from nodes A, B and C to node T and a single service running from T to the city. (Refer to the schematic).



The following information is given:

ROUTE	AT	BT	CT	T-CITY
Route length in km (L)	10	13.3	15	10
Average loading (P)	275	210	330	780
Operating speed in km/h (v_0)	15	20	22.5	10
Load factor (a)	60%	60%	60%	90%

REQUIRED: To determine the fleet size required for transporting passengers from nodes A, B and C to T and from T to the city.

SOLUTION:

ROUTE TRAVELLED

	A-T	B-T	C-T	T-CITY
$T = \frac{60 \times a \times C_v}{P}$	$\frac{60 \times .6 \times 100}{275}$ ~ 12	$\frac{60 \times .6 \times 100}{210}$ ~ 15	$\frac{60 \times .6 \times 100}{330}$ ~ 10	$\frac{60 \times .9 \times 100}{(780 - (202.5 + 171 + 243))}$ ~ 30 passengers/min
$f = \frac{60}{T}$	60 / 12 5	60 / 15 4	60 / 10 6	buses per minute
$C = f \times C_v$	5 x 100 500	4 x 100 400	6 x 100 600	passengers/ minute
$C - P$	500 - 275 225	400 - 210 190	600 - 330 270	passengers/ minute
$C_p = (C - P) \times a_t$	225 x .9 202.5	190 x .9 171	270 x .9 243	Passengers/ minute
$T_0 = \frac{60 \times L}{v_0}$	$\frac{60 \times 10}{15}$ ~ 40	$\frac{60 \times 13.3}{20}$ ~ 40	$\frac{60 \times 15}{22.5}$ ~ 40	$\frac{60 \times 10}{10}$ ~ 60 min
$t_c = 2 \times (T_{0r} + T_0 + t_t)$	$2 \times (60 + 40 + \frac{10}{10})$ 220	$2 \times (60 + 40 + \frac{10}{10})$ 220	$2 \times (60 + 40 + \frac{10}{10})$ 220	$2 \times (60 + 10)$ 140 min
$N = \frac{t_c}{T}$	220 / 12 ~ 19	220 / 15 ~ 15	220 / 10 ~ 22	140 / 30 ~ 5
Need ~ 7% more for maintenance and repairs.				
$N = N_{initial} \times 1.07$	19 x 1.07 ~ 21	15 x 1.07 ~ 17	22 x 1.07 ~ 24	5 x 1.07 ~ 6 buses needed

B-II: Questionnaire for taxi operations

This questionnaire forms part of a Masters' Thesis in Transportation Engineering at the University of Stellenbosch funded by the Institute for Transport Technology.

THE PURPOSE: to understand the main problems facing private bus/taxi operators and to recommend measures to assist in their preparation for the upcoming tendering process.

DISCLOSURE: All information collected from this survey is completely confidential and will be used exclusively for research purposes.

CONTENTS: This document should contain the following:

3. Questions 1 to 12
4. Appendices 1 to 3

Submit completed questionnaires to: **THE TRANSPORTATION SURVEY**
P.O.Box 2022, Cape Town, 8000

Additional Assistance If additional assistance is required, please contact **Jamiela Jakoet** by phone or e-mail to discuss problems or arrange a meeting.

E-mail: jakoet@ing.sun.ac.za

Phone: (021) 423-5549

Cell-phone: 082 469 7102

Questions

Please Note: All questions containing the word “you” in this document refers to the company as a whole and not the person filling in the questionnaire.

17. The government is placing a number of bus routes up for public tender over the next few years. Were you aware of this?

YES	NO
-----	----

18. Tenderers are normally required to obtain suretyship. Suretyship is a guarantee in the form of cash and/or fixed assets. Do you have cash or fixed assets to the value of R100 000?

YES	NO
-----	----

19. Does your public transport business operate separately from all other companies/entities (i.e. Is it Ring Fenced) ?

YES	NO
-----	----

20. Can you provide a financial record for the last year?

YES	NO
-----	----

21. Can you provide an operational record for the last year?

YES	NO
-----	----

22. Is your business **financially sustainable**? (Do you make a profit when allowing for drivers' wages, replacing vehicles, maintenance costs and spare vehicles.)

YES	NO
-----	----

23. Please fill in the number of vehicles operated by your company in the table below:

(Please **DO NOT** write in shaded areas.)

Age of vehicle*		0 – 3 years	3 - 7 years	over 7 years
Total number of vehicles				
Bus type	Capacity			
Midi	17-35			
Mini	10-16			

* Age is taken from the date of first registration of the vehicle.

24. How often do you replace your vehicles?

0 - 3 years	3 – 7 years	7 – 10 years	over 10 years
-------------	-------------	--------------	---------------

25. How often do your vehicles undergo routine maintenance?

0 - 3 months	3 – 6 months	6 – 12 months	over 12 months
--------------	--------------	---------------	----------------

26. How do you pay your drivers?

- Receives a fixed wage or salary
- Keeps balance after paying owner fixed amount
- Other -please specify:.....
.....

27. Please fill in the rates at which your vehicle/(s) operate:

Bus type	Capacity	Rands/km	Rands/hr	km/week	hours/week
Midi	17-35				
Mini	10-16				

28. Refer to **Appendix 1**. Do you take these costs into account when calculating the cost of operating your vehicles? .

YES	NO
-----	----

29. Refer to **Appendix 2**. This is an example of calculating a vehicle's operating cost per km. This was taken from the Vehicle Freight Association. This costing technique can be applied to public transport vehicles if "payload" is replaced with passengers. Are you familiar with the procedure?

YES	NO
-----	----

30. When filling in the following table, note that it is necessary to consider race and gender when establishing equality at work. All information obtained is strictly confidential. (Include owner/proprietors as part of management).

(Please **DO NOT** write in shaded areas.)

Employee type	management	Admin.	Driver	Maintenance
1.Total number				
2.Female				
3.Race: black				
indian				
coloured				
white				
4.Level of education				
university				
tech/college				
matric				
standard 8				
Below std.8				

31. Vehicle scheduling involves calculating size of taxi fleet, operating time-tables, etc. Do you have any experience with vehicle scheduling?

YES	NO
-----	----

IF YES, what technique/(s) do you use?:.....

32. Refer to **Appendix 3**. This shows an example of a vehicle scheduling exercise. Are you familiar with the procedure?

YES	NO
-----	----

33. Is your company registered with The Provincial Taxi Registrar?

YES	NO
-----	----

Appendix #1: Vehicle Cost Schedule

VEHICLE TYPE:	
Capacity	number of passengers
Cost Price. (excl.VAT)	R
Finance cost of capital	%
Monthly repayment	R
Depreciation time	Yrs
Depreciation distance	Km
Residual value	R
Insurance as % of cost price	%
Tare	Kg
Licence	R
Tyre size and ply	
Number of tyres excluding spare	no.
Price of new tyre excl.VAT	R
Price of retread tyre excl.VAT	R
New tyre life : front	Km
New tyre life : rear	Km
Number of retreads : front	no.
Number of retreads : rear. See Note	no.
Retread tyre life : front	Km
Retread tyre life : rear	Km
DRIVERS	
Number of drivers	no.
Monthly remuneration	R
ASSISTANTS	
Number of assistants	no.
Monthly remuneration	R
OVERHEADS	
Annual cost	R
% of fixed cost	%
MAINTENANCE	
% of fixed cost.(Fixed maintenance.)	%
% of running cost	%
cpk running cost	Cpk
FUEL	
Consumotion	l/100km
Price in cents per litre	c/l
LUBRICANTS	
% of fuel	%
Other variable running costs	Cpk
Annual kilometres	Km
Days worked per annum	Days
chargeable hours per work day	Hrs

Note: Number of retreads = number of times that the casings can be retreaded.

VEHICLE COST SCHEDULE		
Vehicle type:	Interlink combination, drop side.	
Payload		36000
Prime mover or rigids :		
Cost Price. (excl.VAT)	R	523,000.00
Finance cost of capital	%	19.80%
Monthly repayment	R	80.00
Depreciation time	yrs	5
Depreciation distance	km	0
Residual value	R	25.00%
Insurance as % of cost price	%	7.50%
Tare	kg	9200
Licence	R	3430
Tyre size and ply		1100R20 16
Number of tyres excluding spare	no.	10
Price of new tyre excl.VAT	R	2,459.00
Price of retread tyre excl.VAT	R	511.00
New tyre life : front	km	40000
New tyre life : rear	km	60000
Number of retreads : front	no.	0
Number of retreads : rear. (Note 8)	no.	2
Retread tyre life : front	km	40000
Retread tyre life : rear	km	60000
Number of steering axles	no.	1
Trailers or semi's:		0
Cost Price. (excl.VAT)	R	152,360.00
Finance cost of capital	%	19.80%
Monthly repayment	R	0
Depreciation time	yrs	10
Residual value	R	0
Insurance as % of cost price	%	5.00%
Tare 1	kg	6500
Licence	R	1806
Tare 2	kg	5600
Licence	R	1476
Tyre size and ply		1100R20 16
Number of tyres excluding spare	no.	16
Price of new tyre excl.VAT	R	2459
Price of retread tyre excl.VAT	R	511
New tyre life	km	100000
Number of retreads. (Note 9.)	no.	2
Retread tyre life	km	100000
Number of axles	no.	4
Drivers		
Number of drivers	no.	1
Monthly remuneration	R	8,335.00
Assistants		
Number of assistants	no.	1
Monthly remuneration	R	2,145.00
Overheads		
Annual cost	R	0
% of fixed cost	%	10.60%
Maintenance		
% of fixed cost.(Fixed maintenance)	%	7.30%
% of running cost	%	21.30%
cpk running cost	cpk	0
Fuel		
Consumption	l/100km	63
Price in cents per litre	c/l	204
Lubricants		
% of fuel	%	5.00%
Sundry		
Other variable running costs	cpk	0
Annual kilometres	km	140000
Days worked per annum	days	225
chargeable hours per work day	hrs	12

ANNUAL FIXED (STANDING) COSTS				
	R	c/km	%	%
Cost of capital (Finance.) (Note 1.)	R66,860.64	47.76	17.88%	9.51%
Depreciation. (Note 2.)	R84,833.80	60.60	22.89%	12.07%
Insurance	R46,843.00	33.46	12.53%	6.67%
On vehicle staff	***** #	72.69	27.21%	14.48%
Overheads. (Note 3.)	R39,638.22	28.31	10.60%	5.64%
Licence	R 6,712.00	4.79	1.79%	0.96%
Fixed maintenance. (Note 4.)	R27,298.02	19.50	7.30%	3.88%
TOTAL ANNUAL FIXED COSTS	***** #	267.10	100.00%	53.21%
VARIABLE (RUNNING) COSTS				
	R	c/km	%	%
Fuel	***** #	128.52	54.72%	25.60%
Lubricants. (Note 6.)	R 8,996.40	6.43	2.74%	1.28%
Maintenance. (Note 5.)	R70,038.95	50.03	21.30%	9.97%
Tyres. (Note 7.)	R69,856.00	49.90	21.24%	9.94%
Other	R -	0.00	0.00%	0.00%
TOTAL VARIABLE COSTS	***** #	234.87	100.00%	46.79%
TOTAL ANNUAL COSTS	***** #	501.98		

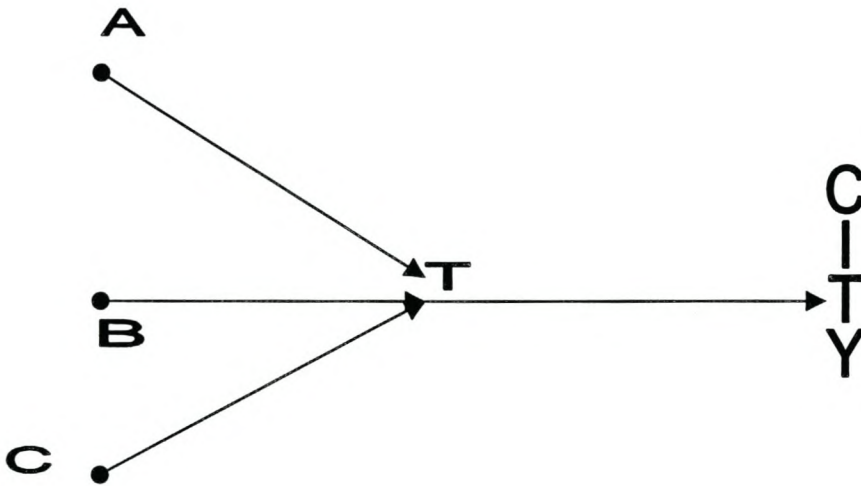
TIME UTILISATION	
Total number of hours worked p.a.	2700
Fixed cost per day	R 1,661.98
Fixed cost per hour	R 136.50
COST PER km	R 5.02

Notes:	
1	Based on 0.5 x Cost Price x Interest rate. Estimates average interest component of monthly payments over 60 months.
2	Initial cost - Residual value - 1full set of new tyres.
3	An iterative calculation. Includes for rents, admin staff and other associated expenses.
4	An iterative calculation. Includes time based maintenance such as associated with CoF inspections.
5	An iterative calculation. Estimates maintenance costs associated with distance travelled.
6	Based on fuel consumption.
7	See Tyre Calculation table.
8	Number of wheel groups with retreads.
9	Number of wheel groups, per trailer, with retreads?

Appendix #3: Vehicle scheduling tutorial.

PROBLEM:

There are three bus services running from nodes A, B and C to node T and a single service running from T to the city. (Refer to the schematic).



The following information is given:

ROUTE	AT	BT	CT	T-CITY
Route length in km (L)	10	13.3	15	10
Average loading (P)	275	210	330	780
Operating speed in km/h (v_0)	15	20	22.5	10
Load factor (a)	60%	60%	60%	90%

REQUIRED: To determine the fleet size required for transporting passengers from nodes A, B and C to T and from T to the city.

SOLUTION:

ROUTE TRAVELLED

	A-T	B-T	C-T	T-CITY
$T = \frac{60 \times a \times C_v}{P}$	$\frac{60 \times .6 \times 100}{275}$ ~12	$\frac{60 \times .6 \times 100}{210}$ ~15	$\frac{60 \times .6 \times 100}{330}$ ~10	$\frac{60 \times .9 \times 100}{(780 - (202.5 + 171 + 243))}$ ~30 passengers/min
$f = \frac{60}{T}$	$60 / 12$ 5	$60 / 15$ 4	$60 / 10$ 6	buses per minute
$C = f \times C_v$	5×100 500	4×100 400	6×100 600	passengers/ minute
$C - P$	$500 - 275$ 225	$400 - 210$ 190	$600 - 330$ 270	passengers/ minute
$C_p = (C - P) \times a_t$	$225 \times .9$ 202.5	$190 \times .9$ 171	$270 \times .9$ 243	Passengers/ minute
$T_0 = \frac{60 \times L}{v_0}$	$\frac{60 \times 10}{15}$ ~40	$\frac{60 \times 13.3}{20}$ ~40	$\frac{60 \times 15}{22.5}$ ~40	$\frac{60 \times 10}{10}$ ~60 min
$t_c = 2 \times (T_{or} + T_0 + t_t)$	$2 \times (60 + 40 + 10)$ 220	$2 \times (60 + 40 + 10)$ 220	$2 \times (60 + 40 + 10)$ 220	$2 \times (60 + 10)$ 140 min
$N = \frac{t_c}{T}$	$220 / 12$ ~19	$220 / 15$ ~15	$220 / 10$ ~22	$140 / 30$ ~5
Need ~7% more for maintenance and repairs.				
$N = N_{initial} \times 1.07$	19×1.07 ~21	15×1.07 ~17	22×1.07 ~24	5×1.07 ~6 buses needed

Appendix C

C-I: Letter of encouragement

24 March 2000

P O Box 2022
Cape Town
8000

Dear Sir or Madam,

Subject: Participation in Transport survey

Recently I mailed you a questionnaire asking for your participation in an important survey.

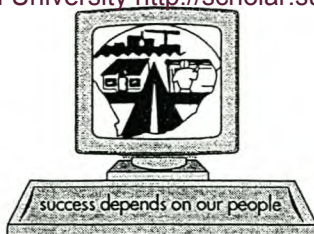
If you have already returned the questionnaire, please consider this letter a "Thank You" for your valuable help.

If you have not had a chance to do so as yet, may I ask you to return the completed form now? Your participation is vital to the success of my study.

Sincerely yours,

Jamiela Jakoet
Research (Institute for Transport Technology)
University of Stellenbosch

C-II: SBTACO letter of endorsement



P.O. Box 7922 Roggebaai 8012 Tel: (021) 462 4309 or 462 5719 Fax: (021) 462 5719

Our Ref:

Your Ref:

Date:

13th April 2000

TO WHOM IT MAY CONCERN

Jamiela Jakoet is currently studying for a Masters degree in Transportation Engineering at the University of Stellenbosch. Her research thesis is aimed at attempting to understand the potential problems that may arise for private bus/taxi operators when the Provincial Administration of Western Cape's new tendering system for bus routes comes into effect in June 2000. The results of her research will be compiled into a report, with recommendations, that will be used to address the problems facing (especially non-white) private bus and taxi operators.

As an organisation that promotes the development of engineering skills in previously disadvantaged communities, and the advancement of black business in the broader South African context, we support this initiative that Jamiela has undertaken.

We believe that this report will go a long way to understanding the difficulties faced by non-white owned companies in the transport sector and will contribute positively towards developing workable solutions to these problems.

We would therefore urge operators to respond to the questionnaires to ensure the success of the study.

Yours faithfully

A handwritten signature in black ink, appearing to read "Thabo Mashologu".

Thabo Mashologu
(Chairperson – SABTACO Western Cape)

(All correspondence to be addressed to the Secretary)

Executive Members: Thabo Mashologu (Chair), Osman Narker (Vice Chair), Reggie Kukama (Sec), Rodger Clayton (Finance Manager), Willy Matthews (Portfolio Manager), Carmen Du Toit (PRO), Raschid Dollie, Yagen Naidoo, Rayganah Fisher (Office Administrator)

C-III: Market research incentive

IMPORTANT

Please note that results of this study will be available for market research purposes. If you wish to receive a copy of the results of this study, please answer 'YES' to the following question and return it with your completed questionnaire.

Would you require a copy of the results of this study?

YES	NO
------------	-----------

If you wish to remain anonymous, you may choose not to disclose your personal details in question 16 of the questionnaire.

It is important that you return the questionnaire whether you answer all the questions or not or wish to remain anonymous.

C-IV: Cover letter for questionnaire

14 April 2000

Dear Public Transport Operator:

Re: Public Transport Survey

In June of this year, the Provincial Administration of the Western Cape will be launching a new tendering system for the procurement of bus and taxi routes. Bus and taxi operators will be required to tender in open competition for the delivery of a public transport service on all routes. As this is a new system, it is anticipated that problems may arise in the implementation process.

The purpose of this questionnaire is to establish from you, the public transport operators, what potential problems you foresee in the implementation of the system. The results of the survey will be compiled into a report to the Directorate of Transport with recommendations as to how to address your concerns. The success of this report is highly dependent on the responses received from you.

We therefore appeal to you to take time to complete the forms. I wish to emphasise that the identity of respondents **will not be disclosed at any time in the compilation of the report and that all responses will be treated with the strictest confidentiality.**

Following the poor response from the first round, I am resending this questionnaire. If you were kind enough to respond the first time, I wish to express my appreciation. If you have not responded, I appeal to you to do so as this may lead to improvements in the tendering system.

Kindly return the questionnaire in the self-addressed envelope. Should you have any queries, please contact **Jamiela Jakoet** at the following:

ph: (021) 4235549, fax: (021) 4235549, cell: 082 469 7102, jakoet@ing.sun.ac.za.

Thank you for your co-operation,

Professor C J Bester

Pr. Eng, D. Eng

University of Stellenbosch

Appendix D**D-I: Bus fleet structure**

Age of Vehicles	0-15 years	15-22 years	22-27 years	over 27 years	% of Total
Total Number	56%	26%	18%	1%	100%
Articulated bus	0%	0%	0%	0%	0%
Double-decker bus	0%	0%	0%	0%	0%
Standard bus	58%	66%	83%	100%	65%
Medium bus	8%	17%	13%	0%	11%
Midi bus	11%	14%	4%	0%	10%
Mini bus	22%	3%	0%	0%	13%
Detail not available	1%	0%	0%	0%	1%
Number rehabilitated	12%	0%	0%	0%	7%
Number rebuilt	7%	20%	17%	0%	12%

Average numbers of buses per respondent: 8

Standard Deviation: 9.8

D-II: Taxi fleet structure

Age of Vehicles	0-3 years	3-7 years	over 7 years	Percent of total
Total Number	31%	11%	58%	100%
Midi bus (17-35)	0%	0%	4%	3%
Mini bus (10-16)	100%	100%	96%	98%
Details not available	14%	60%	0%	11%

Average number of taxis per respondent: 3

Standard Deviation: 3.2

Appendix E**E-I: Bus employee numbers**

Respondent number	Management	Administratio	Drivers	Maintenance	<i>Total</i>
2	3	5	33	8	49
3	0	1	4	0	5
4	1	0	0	0	1
5	1	2	4	1	8
6	2	6	33	14	55
7	2	0	2	1	5
8	2	0	4	3	9
9	18	8	8	2	36
10	0	1	2	0	3
12	3	2	12	2	19
13	1	0	7	1	9
14	1	1	2	0	4
15	1	0	1	0	2
16	2	1	12	2	17

Average employees per company: **16**

Standard deviation: **18**

E-II: Taxi employee statistics

Respondent number	Management	Administration	Driving	Maintenance	<i>Total</i>
6	1	0	0	0	1
7	0	0	0	4	4
12	0	0	0	5	5

Average employees per company **3**

Standard Deviation **2.1**

Appendix F**F-I: Bus employee structure**

<i>Employee Type</i>	Management	Administratio	Driver	Maintenance	<i>% of</i>
<i>Total Number</i>	17%	12%	56%	15%	100%
Female	38%	42%	19%	0%	12%
Race: black	22%	33%	35%	31%	32%
indian	6%	4%	0%	16%	4%
coloured	58%	48%	63%	50%	58%
white	14%	15%	3%	3%	6%
Race not given	3%	0%	3%	6%	3%
Education: university	9%	7%	0%	0%	3%
tech/college	29%	40%	2%	13%	13%
matric	26%	27%	5%	13%	13%
standard 8	9%	20%	31%	25%	24%
below std.8	26%	7%	62%	50%	47%
Education level not	8%	44%	27%	53%	30%

Average employees per company: 16

Standard deviation: 18.0

F-II: Taxi employee structure

<i>Employee Type</i>	Management	Administration	Driver	Maintenance	<i>% of Total</i>
<i>Total Number</i>	15%	5%	74%	5%	100%
Female	0%	0%	0%	0%	0%
Race: black	33%	0%	59%	0%	55%
indian	0%	0%	0%	0%	0%
coloured	67%	0%	41%	100%	45%
white	0%	0%	0%	0%	0%
Race not given	50%	100%	0%	50%	15%
Education: university	0%	50%	0%	0%	3%
tech/college	0%	50%	0%	0%	3%
matric	100%	0%	42%	0%	42%
standard 8	0%	0%	12%	100%	13%
below std.8	0%	0%	46%	0%	39%
Education level not	67%	0%	10%	50%	21%

Average employees per company 3

Standard Deviation 2.1

Appendix G**G-I: Bus fleet statistics**

<i>Respondent number</i>	0 - 15 years	15 - 22 years	22 - 27 years	Over 27 years	<i>Average age</i>
1	0	1	0	0	19
2	19	0	0	0	8
3	0	0	4	0	25
4	0	0	0	1	30
5	0	5	0	0	19
6	23	9	8	0	13
7	4	0	0	0	8
8	0	7	0	0	19
9	5	0	0	0	8
10	3	0	1	0	12
11	0	3	0	0	19
12	15	0	0	0	8
13	5	0	4	0	15
14	1	1	0	0	13
15	0	2	0	0	19
16	1	6	7	0	21
17	0	1	0	0	19
<i>Combined</i>	76	35	24	1	13

Average company fleet age:

16

Standard Deviation:

6

Average total fleet age:

13

G-II: Taxi fleet statistics

<i>Respondent number</i>	<i>0 - 3 years</i>	<i>3 - 7 years</i>	<i>Over 7 years</i>	<i>Average age</i>
1	1	0	2	8
2	0	0	0	0
3	0	0	4	11
4	0	0	4	11
5	2	3	0	4
6	10	0	0	2
7	0	1	2	9
8	0	0	1	11
9	0	1	9	10
10	0	0	1	11
11	0	0	1	11
12	1	0	0	2
13	0	0	1	11
14	0	0	1	11
<i>Combined:</i>	<i>14</i>	<i>5</i>	<i>26</i>	<i>7</i>

*Average company fleet age:***8***Standard***4.3***Average total fleet age:***7**

Appendix H

H-I: Unsuitable buses

<i>Respondent</i>	0 - 15 years	15 - 22 years	22 - 27 years	Over 27 years	<i>Number unsuitable</i>
1	0	1	0	0	1
2	19	0	0	0	0
3	0	0	4	0	4
4	0	0	0	1	1
5	0	5	0	0	5
6	23	9	8	0	17
7	0	0	0	0	0
8	0	0	0	0	0
9	5	0	0	0	0
10	3	0	1	0	1
11	0	3	0	0	3
12	5	0	0	0	0
13	5	0	0	0	0
14	1	1	0	0	1
15	0	2	0	0	2
16	1	6	7	0	13
17	0	1	0	0	1
<i>Totals:</i>	62	28	20	1	49

Percent unsuitable: 36%

H-II: Unsuitable taxis

<i>Age of vehicles</i>	0-3 years	3-7 years	over 7 years	<i>Totals</i>
<i>Total Number</i>	14	5	26	45
Midi bus (17-35)	0	0	1	1
Mini bus (10-16)	12	2	25	39
Details not available	2	3	0	5

Percent unsuitable: 58%