

**UNIVERSITY OF NAIROBI**

**SCHOOL OF MATHEMATICS**

**A STUDY OF FACTORS DETERMINING  
ALLOCATION OF PUBLIC FUNDS IN KENYA**

**BY**

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A research project submitted in partial fulfillment of the requirement for the  
Postgraduate Diploma in Actuarial Science.

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## DECLARATION

This project is my original work and has not been presented for a Degree or a Diploma in any other University.

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## DEDICATION

In the memory of my late Grandfather Selestine Ayoo , I remember with fond nostalgia our memorable moments. I sadly miss you. Amen.

## ABSTRACT

Allocation of public funds to various Regions/ Provinces of Kenya is very unequal since the colonial period in the Kenyan history. The colonial government allocated public funds to various regions in Kenya during colonial period unequally.

After attainment of independence in 1963A.D., the independent Kenya Government continued with allocating public funds to various Regions (Provinces) unequally. This was and is contrary to the expectation of Kenyans who felt that the unequal allocation of public funds to various regions of the country should have ceased with the attainment of independence in 1963A.D.

The basic purpose of this study was to examine factors determining allocation of public funds in Kenya by the Government. In addition, the study sought to determine which are suitable or unsuitable factors to be considered by the Government in allocating public funds to various Provinces (Regions) of Kenya.

The survey involved 215 people from all the eight Provinces of Kenya. Multiple methods namely Simple Random Sampling, Stratified Random Sampling and Systematic Random Sampling were applied in identifying the respondents. Data pertinent to the study was gathered through the use of questionnaires developed by the researcher. Basically the research instrument sought to gather information ranging from political inclination of a Province, poverty level of a Province, natural resources available in the Province, commercial and administrative importance of a Province, population of a Province and G.D.P. Contribution of a province to the total national output.

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**LIST OF ABBREVIATIONS**

G.D.P.	-----	Gross Domestic Product
I.L.O.	-----	International Labour Organization
I.D.B	-----	International Development Bank
L.D.C.	-----	Least Developed Country
S.P.S.S	-----	Software Package for Social Scientists
U.N.D.P.	-----	United Nations Development Programme

**LIST OF ABBREVIATIONS**

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## **CHAPTER 1**

### **1.0 INTRODUCTION**

This chapter covers largely background of the study, statement of the problem objectives of the study and significance of the study.

#### **1.1 Background**

According to various statistics there is a wide disparity in terms of resource allocation among the eight Provinces/regions which has contributed to inequality in terms of economic development in the various regions of the country.

Wide disparities are evident in access to water, electricity, education, health reach and national income distribution inequality across all the Kenya's eight Provinces.

All these among others, indicate that there exist a wide gap in access to the national cake.

#### **1.2 The Statement of the Problem**

The aim of the study is to investigate the expenditure patterns and factors determining the allocation of public funds in Kenya. Therefore it is imperative to understand the factors used in order to achieve the objectives of the government. Indeed a nation like Kenya is faced with many needs but has very limited resources. The essence of any government is to enhance the welfare of it's people through it's activities. Bhatia (1998) gave a sterling presentation that a government in a capitalist or mixed economy is supposed to enhance the allocation of resources so as to reach the social optimality level. The market system in it's own will lead to pareto optimality conditions but its usually not equitable in the sense that the rich get richer while the poor continue to wallow in abject poverty. The government must also ensure that the way it structures it's expenditure spurs economic growth. Also in developing countries the government plays a major role in production of the public goods and services which the market cannot adequately produce.

Samuelson (1998) intimated that a government should stabilize an economy through it's macroeconomic policies. These are supposed to prevent business calamities like depression via monetary and fiscal policy as well as close regulation of the financial system. Public expenditure is part of the fiscal policy and the factors affecting allocation of the funds is the focus of this paper.

This study will aid in identifying the specific variables used by the Kenya Government in allocation public funds for example finding out why North Eastern Province received a lesser amount in roads allocation in the 2006 budget compared to central Province or Western Province. It will also aim to explain why government through statistical data states that there is economic growth while some citizens still complain that they are not having any improvement in welfare.

### **1.3 Objectives of the Study**

1. To identify the factors determining the allocation of public funds in Kenya.
2. To determine the principal factors influencing allocation to public funds in Kenya.

### **1.4 Significance of the Study.**

This study will be of great importance to government planners and politicians in allocation of public funds as this will enhance transparency and accountability in allocation.

It will promote citizens understanding and appreciation why they are allocated certain amounts annually and enable them make a contribution as to how future allocation should be made.

It will be useful for donors and fund agencies in gauging government commitment in meeting their conditions and finally it adds to the body of knowledge in public finance.

## CHAPTER 2 LITERATURE REVIEW

### 2.0 Introduction

This chapter covers literature review which is organised under the following sub-headings: Theories on public expenditure, public expenditure and economic growth, criteria for public for public expenditure allocation and summary.

### 2.1 Theories on Public Expenditure

Adolph Wagner (1883) put forward a proposition known as **Wagner's law of increased government activity**. This theory suggests that there would be an inevitable increase in the share of government expenditure in total output, because an expanding government expenditure would necessarily accompany social progress and raising incomes.

According to Wagner, public expenditure would grow because the increasing division of labour would lead to the breakdown of communal relationships, require in the state to take over functions previously carried out by families and local communities. In the process, administration would become more centralized, administrative units larger and the government would need to ensure stability. Government would also need to expand to provide social benefits and services which Wagner saw as not open to economic evaluation including education and health care.

According to Musgrave and Rostow, (separately) suggested that growth of public expenditure might be related to the pattern of economic growth and development in societies. Three stages in the development process could be distinguished as follows:-

- (a) The early development stage where considerable expenditure is required on education and on the infrastructure of the economy and where private saving is inadequate to finance this necessary expenditure.
- (b) The phase of rapid growth in which there are large increases in private saving and public investment falls proportionately and
- (c) High income societies with increased demand for private goods which need complementary public investment.

Government expenditure will be influenced by level of development in a country and pattern of economic growth.

Peacock and Wiseman (1979) under the heading of permanent influences on government expenditure from the changing nature of society listed the following: the level of development, population size, the age composition of the population, increased output per capita, increasing population, social insurance (health care), increased mobility of society, effects of war, war-related and defence expenditure.

According to Peacock and Wiseman, the problem lies in the permanent nature of all of these influences. They argued public expenditure growth had not been steady but had involved spurts of growth followed by long static periods.

## 2.2 Criteria for Public Expenditure Allocation

### 2.2.1 Political Patronage and Public Expenditure

The political – economic approach stresses that

- (1) Elites make decisions which disproportionately benefit the economic and political interests of their class
- (2) as a result, policies implemented tend to create or perpetuate regional economic inequalities, through intra-national exploitation and neglect of the periphery by the centre (Anderson K. H. 1985)

Political Scientists Calvo and Murillo 2004; Gordin 2002; Robinson and Verdier 2003 placed the exchange of public sector employment for political support at the centre of analysis. For instance, as emphasized by Stokes (2005), the efficacy of clientelistic electoral appeals is less a product of the income, education, other characteristics of voters than of the capacity of politicians to monitor electoral behaviour. The distribution of public jobs to supporters who gather information about voters and address their material needs is critical to this capacity. It is precisely for this reason that the patronage politics is often utilized as a synonym for patrimonialism, which in Weber's (1947) classic formulation represents a form of governance in which bureaucratic appointment revolves around personal connections, informal rules and the blurring of the public and private realms.

As suggested by Ames (1987, 13), however, politicians whose political careers depend on building and maintaining an active political network of supporters face pressures to increase spending after elections. Their key expectation regarding the distinctiveness of patronage business cycles is such that distributions of patronage should expand significantly in the year subsequent to elections as politicians attempt to co-opt opponents, deliver on promises of jobs to supporters, and otherwise fortify their political bases to advance their political careers.

Governments are reputed to be bad at choosing winners and picking identified losers as they are driven by political rather than economic factors (Robinson and Torvik, 2005). In many developing countries, this manifests itself in various ways, such as the commissioning of unfeasible projects that end up as the so-called 'white elephants'. Given the high levels of inefficiency and negative social returns of white elephants; social scientists attribute their occurrence to political patronage. And analysis of the occurrence and distribution of such projects in Kenya is one channel of investigating budget efficacy or manipulation. The pattern of public employments particularly in public enterprises, can also be used to assess the budget for political patronage or nepotism.

If one is to link political influence, public spending and inequality, one must compare for example such projects as water projects, electricity projects, schools, health centres and road construction projects with political regimes that have ruled Kenya since independence. Such projects could be influenced by a number of factors and the elite. If we notice a consistent higher pattern of expenditure in certain regions (those with powerful politicians), then one may conclude that perhaps political factors are in play in resource allocation, holding other factors constant.

According to Morton (1998), as cited in Mwega and Ndung'u (2002), Moi's redistribution policy was more of an ethnic redistribution, switching resources from Central Province to Rift Valley Province. It is not difficult to identify politically motivated projects, some of which qualify as 'white elephants.' For instance, projects such as the Eldoret International Airport, Turkwell Gorge Hydroelectric Power Projects Nyayo Tea Zones and other related projects have been cited as classic cases of projects whose economic viability has been put to question. One of the milestones of the Moi Government was the rapid expansion in public universities. It is insightful that the additional universities were in the Rift valley, Nyanza, Central and Nairobi Provinces none in Eastern, Coast, Western and North Eastern Provinces. The pattern of public employment has also been used as a channel of patronage. Mwega and Ndung'u (2002) cite the creation of the National Cereals and Produce Board (NCPB) as a good example. The NCPB was created mainly to benefit cereals farmers in the Rift Valley Province. Anecdotal evidence points to increased state intervention in public enterprises.

Using data on development expenditure for roads, rural health and the 'Rural Development Fund', Barkan and Chege (1989) found that during Kenyatta's era, districts in his political base received a relatively higher share of development expenditure for roads. However, when Daniel Arap Moi took over in 1978, the situation reversed. For instance, in 1986 – 1987, Rift Valley Province alone accounted for 52% of total roads development expenditure.

In 1987-1988 Moi base Provinces received 49% share of rural health spending and 33% of Rural Development Fund compared to 18% and 33% respectively, for Kenyatta base Provinces. By the sixteenth year of Moi's rule, his political base was getting 67% of roads budget compared to 16% for Kenyatta base (Robinson and Torvik, 2005). Emerging evidence points to marginalization of Coast and Nyanza Provinces during the two past political regimes.

### **2.2.2. Population Aspects and Public Expenditure**

Gabler L. R. (1971) used a multiple regression technique to test the empirical relationship between population aspects and public expenditure. He selected the states in the USA. The critical consideration was the number of cities within each state that were available for analysis. Using thirty cities as the criterion, the following states were selected. California, Illinois, Massachusetts, Michigan, New Jersey, New York, Ohio and Texas.

He started by looking at population density. Population density provides a measure of average concentration of the population and may affect public employment and expenditures in either direction. That is, the crowding together of people may make the provision of public goods and services more difficult and thus more expensive. Conversely, increasing density may permit more efficient exploitation of existing facilities and equipment thereby leading to lower per capita employment and expenditures, though some sacrifice in service standards may also be encompassed. The results of these analysis indicate that there is a systematic relationship between population density and public employment or public expenditure per capita. The association is generally inverse suggesting that cities with greater density of population accommodate these needs by more efficiently exploiting existing facilities and equipment, possibly at the sacrifice of service quality. Of the 26 statistically significant relationships between density and public employment and expenditures, 21 were negative.

The rate of population growth can be expected to lead to increased demands for public services.

Like the density factor these additional demands may be met by more efficient use of existing public facilities or by letting service levels deteriorate somewhat. Perhaps more important, budgetary decisions may be affected by the rate of population growth. If the budget process tends to anticipate growth in population, a positive relationship would emerge; if it lags, then the association would be inverse. The statistical results indicate that both positive and negative relationships between rate of population growth and public employment or expenditures per capital tend to occur.

### 2.2.3 Poverty Level and Public Expenditure

With mankind making impressive progress on several fronts over the years, persistence of poverty remains to be a pervasive problem in many regions of the World. The simple fact that more than 1.3 billion people on this planet live on less than one dollar a day indicates the extent and the degree of the problem (studies by United Nation Development Program (UNDP and ILO 2006). Poverty does not limit itself to lack of income only, it is manifested in other dimensions of human lives. Thus in the developing World more than 850 million people go hungry every night, more than 800 million adults are illiterate and more than a billion people do not have access to safe water.

Rasheda Selim in his studies on Economic growth, employment and poverty reduction in three countries (Bangladesh, Bolivia and Ethiopia) found out that poverty reduction cannot be realized unless economic growth has to create employment opportunities for poor people and ensure that they can take advantage of those opportunities. The latter can annulled to public provision of basic social services for poor people in order to enhance their capabilities. If the poor have more access to productive resources and if the growth process ensures that they are integrated into the expanding globalized economy. If these conditions are met, poor people will increase their share in economic growth. In short, economic growth will be poverty reducing only if it is for the poor.

The world development report 2000/2001 point out that there is a large variation in the statistical relationship between national per capita income growth and poverty measures. Given this wide variation, many authors point out that the interesting policy question is not the connection of the poor to economic growth, but to understand how both growth and poverty are affected by other set of factors such as public expenditure allocation.

Social expenditure is undoubtedly the most important component through which the state can affect income distribution. There is a great deal of evidence that social expenditure has a significant effect on secondary income distribution. Moreover, in the long term greater investment in human capital makes it possible to affect one of the structural determinants of income distribution. The existing studies show that greater allocation of resources to education, which makes it possible to improve the distribution of human capital in a society, can have effects on income distribution which are much greater than those estimated in short-term income distribution incidence studies (see, for example, IDB, 1997, pp. 82-83). Important effects could also possibly be achieved if efforts were directed towards improving asset distribution, including the redistribution of assets without giving rise to distortions in economic activity (as in the case of institutional improvements to channel credit to small-scale or micro-enterprises without



altering the credit market, or the new agrarian reform schemes which make active use of the land market.

The research in Latin America on secondary income distribution indicate that in absolute terms the higher-income sectors derive more benefit from social expenditure. As a proportion of the income of each stratum, however, the subsidies channelled through such expenditure are greater for the poorest sectors of the population. This global pattern is the result of the very different distributive impacts of the different types of expenditure. The degree of targeting on the poor (i.e. the proportion of expenditure directed towards the poor compared with the proportion of the population which is in a state of poverty is high in the case of expenditure on health, primary education and to a lesser extent, secondary education). In contrast, expenditure on social security and higher education displays a generally regressive tendency. Expenditure on housing is in an intermediate position, since it benefits in particular the middle strata of the income distribution table.

#### **2.2.4. Resource Availability, Commercial Importance and Public Expenditure.**

Piara (1975) provides the most comprehensive test of the effect of public infrastructure on regional economic growth for the U.S. He hypothesizes that the growth of regional economic activity is determined primarily by the growth of public infrastructure and technical progress in the region. He examines the growth characteristics of the nine US census regions from 1947 to 1963 and concludes that more developed regions are growing because of the growth of public infrastructure, while less – developed regions are growing primarily because of the growth of technology.

Hansen (1965) focuses on the potential effectiveness of public infrastructure across three broad categories of regions; congested, intermediate, and lagging. Congested regions are characterized by a very high concentration of population, industrial and commercial activities, and public infrastructure. Any marginal social benefits that might accrue from further investment would be outweighed by the marginal social costs of pollution and congestion due to increased economic activity in the area. Intermediate regions are characterized by an environment conducive to further activity in an abundance of well-trained labour, cheap power, and raw materials. In this area, increased economic activity resulting from infrastructure investment would lead to marginal social benefits exceeding marginal social costs. Lagging regions are characterized by a low standard of living due to small-scale agriculture or stagnant / declining industry. The economic situation offers little attraction to firms, and public infrastructure investment would have little impact.

On the other hand Herzog, Schlottmann, and Johnson (1986) find that high technology workers, presumably a high mobile labour group, exhibit little sensitivity to public infrastructure-type amenities and services. Eberts (1985) explores the relationship between public infrastructure and firm location in a somewhat different way by considering the causal relationship between public and private investments. His premise, follows the cumulative model of regional growth, that the timing of investment indicates the role of public investment in promoting local economic development. If public investment precedes private investment, then it would appear that local areas actively use public outlays as an instrument to direct local development. On the other hand, if the sequence of events occurs in the opposite direction, it would appear that local officials

merely respond to private investment decisions. Using public outlay and manufacturing investment data from 1904 to 1978 from 40 cities, Eberts finds a significant causal relationship between public outlays and private investment in 33 of the 40 cases. The direction of causation goes either way. Private investment is more likely to influence public outlays in cities located in the South and in cities that have experienced above-average growth before 1950. Public outlays are more likely to influence private investment in cities that experienced much growth before 1950.

Looney and Frederiksen, in their study of Mexico, support Eberts findings for older US cities which public investment appears to be the initiating factor in the development process rather than the passive or accommodating factor. These results raise an interesting question. Is the growth associated with public infrastructure as a result of an overall increase in firm-level productivity or a result of an increase in the region's attractiveness to labour and capital? Hulten and Schwab's (1984) research on regional productivity differentials provides some insight into this distinction. They test the hypothesis that the economic decline of the Snowbelt was due to economic efficiency relative to the Sunbelt, by calculating regional differences in total factor productivity. They find little evidence to support this hypothesis. Instead, they find that these inter-regional differences are largely a result of differences in the growth of capital and labour input. Thus, the implication from these findings is that regional differences in the quality and quantity of public infrastructure may have a greater effect on the infrastructure integration decisions of factors than on the productivity differentials.

### 2.3 Summary

The three major theories on public expenditure indicate that over the years government have experienced an inevitable increase in the share of government expenditure. Wagner (1883) attributes this to the need for the state to take over of functions previously carried out by families and local communities. Such function include defence, administration, education and health care. Musgrave and Rostow recognized three stages of development and from critical analysis. Kenya falls under early development stage where huge expenditure from government is required on education and infrastructure since private saving is inadequate to finance such expenditure. Peacock Wiseman in his theory argued that public expenditure growth had not been steady but had involved spurts of growth followed by long static periods.

There has been a general lack of consensus on the effect of public expenditure on economic growth based on empirical research carried out in the last two decades. Various researchers have come up conflicting results based on their respective researches. Some researchers have found positive relationship between public expenditure and economic growth. These include Ram (1986) who found a positive relationship between government spending and economic growth. Arcand (2001) and Wang and Taniguchi (2003) found that better nutrition enhances economic growth while Reinhart (1999) finds that public health services create a positive linkage between government spending and economic growth. Easterly and Taniguchi (2003) found that better nutrition enhances economic growth while Reinhart (1999) finds that public health services create a positive linkage between government spending and economic growth. Easterly and Rebelo (1993) find that public investment in transport and communication is consistently and positively correlated with growth while Bodman (1998) found that government infrastructure capital has a significant impact on growth Mesghena Yasin like Aschauer (1989) finds that

government spending on capital formation has positive effect on economic growth.

However not all share this view that public expenditure has a positive impact on economic growth. Barth and Bradley (1987), Landau (1983) and (1986) and Grier and Tullock (1987) report negative and significant relation between the share of government consumption in GDP and the growth in GDP. Diamond (1989) also found that capital expenditure had a negative influence on economic growth which he attributed to long gestation period and inefficiency associated with the use of public funds. Devarajan and Vinaya (1993) found a negative and insignificant relationship between productive expenditure and economic growth. Pantelis Kalaitzidakis and Sarantis Kalyvitis (2005) found that the negative impact of total expenditures in public capital formation on growth.

Kormendi and Meguir (1985) found no significant relation between average growth rates of real GDP and average growth rates or levels of the share of government expenditure spending proportion of GDP. Hsieh and Lai (1994) provide no conclusive answer on this relationship.

Various reasons for this lack of consensus have been put forward and some are highlighted below. First is that results and evidence differ by country/ region, analytical method employed and categorization of public expenditures. The nature of the impact of public expenditure will depend on its form. Third, in empirical work it is difficult to determine which particular items of expenditure should be categorized as productive or unproductive. Finally, there is no agreement regarding the direction of causality between public spending and economic growth.

Despite this, lack of agreement by empirical research on effect of public expenditure on economic growth governments continue to engage in public spending and at an increasing rate. There is need to understand what factors effect the allocation of public expenditure. Such an understanding will contribute to a better understanding of the manner of allocation of public resources and make it easier to evaluate impact of such expenditure.

Many studies evidence that political patronage plays an important role in allocation of public funds especially where there is no clear criteria of public funds allocation. Stock 2005, Ames (1987), Robinson and Torvik, 2005 in their various studies concluded that the distribution of public jobs, infrastructure and universities depends a lot on the support accorded to the incumbent government.

On population aspects and public expenditure Gabler L. R (1971) in his study concludes that a densely populated area makes the provision of public goods and services more difficult and therefore more expensive though it may lead to full exploitation of existing facilities. Also high population growth rate in a region leads to higher demand of public facilities thus leading to increased expenditure.

From UNDP and ILO 2006 studies it is evident that a huge proportion of the world's population lives under poverty. Thus, there is need for governments to channel public funds on economic activities that create employment activities for the poor and provision of basic social services in

order to enhance their capabilities(Rashid Selim). The research in Latin America then to deviate from the view that social spending alleviates poverty since their findings indicate that in absolute term higher income sectors derive more benefit from social spending.

Government finds it crucial to maintain areas of administrative and and commercial importance to enhance efficiency and full exploitation of resources in certain regions .Therefore, there is need to allocate more public funds to such areas .Piara (1975)in his study concluded that the growth of regional economic activities is determined primarily by the growth of public infrastructure and technical progress in the region. Hansen (1965)refuted Piara conclusion in his findings that congested regions which are characterized by a very high concentration of population,industrial and commercial activities ,and public infrastructure have there marginal social benefits accruing from further investment,outweighed by the marginal social costs of pollution and congestion due to increased activity in the area.

On natural resources Hulten and Schwab's (1984) research on regional productivity differentials provide some insight that regional differences in the quality of public infrastructure may have a greater effect on the integration decisions of factors than on the productivity differentials.

An important questions which are frequently asked is whether Kenya has criteria for allocating public funds ? This and many more will be answered by this study.

The review of past empirical studies indicate that most of these studies have been done in developed countries where the objective of the government may differ from those of developing countries like Kenya. Others focused their studies on one factor which forms part of the variables identified in this studies hypothesis as influencing public funds allocation in Kenya.

This study will therefore attempt to identify all important variables influencing public funds allocation in Kenya and finally come up with principal factors through factor analysis.

## CHAPTER 3 RESEARCH METHODOLOGY

### 3.0 Introduction

This chapter covers research methodology. It is organised under the following sub-headings: Research Design, population of interest, sample, data collection and methods used in data analysis.

### 3.1 Research Design

The study used a survey approach to elicit data from the respondents. A basic feature of a basic research is that the information is collected at one point in time with the intention of describing the nature of existing conditions or determining relationships that exist between variables. Basically the study involved the exploration and the examination of factors determining allocation of public funds in Kenya.

The study was further designed to gather data on the perception of the respondents towards the factors which could be suitable or unsuitable in determining allocation of public funds in Kenya.

### 3.2 Population of Interest

The population of interest will be the Nairobi residents. The choice of Nairobi is due to the fact that as the capital city, education, industrial, residential and a major commercial centre, it is representative of country. In deed the research is interested in determining the allocation of public resources in Kenya in reference to the eight Provinces and in Nairobi, we can get people from all the eight Provinces of Kenya.

### 3.3 Sample

The Sample size is 200 people from various areas in Nairobi. The choice of these people and areas is based on simple random sampling method. The factors that influenced the sample size are time and resource constraints and lack of population variance.

To ensure that the sample is representative of the Kenyan population, people from the following classes will be taken. The classes are as follows:

- Students
- Civil servants/Politicians
- Religious leaders
- Farmers
- Professionals
- Job seekers
- Public transport operators
- Academicians/ Teachers
- Casual labourers

### 3.4 Data Collection

The data will be collected through the use of questionnaires. The questions in the questionnaires will make use of the likert scale with a range of 1-5, where

- 5 - Very important
- 4 - Important
- 3 - Neither important nor unimportant
- 2 - Not important
- 1 - Not important at all

The questionnaires will be administered either by walking the respondents through the questionnaires or if they understand, will fill it themselves.

### **3.5 Methods used in data analysis**

The researcher have used Factor Analysis, Tabulation Analysis and Regression Analysis.

#### **3.5.1 Factor Analysis**

In the factor analysis, the researcher used the component matrix. In the component matrix used, principal component analysis with two components was extracted.

#### **3.5.2 Tabulation Analysis**

In the tabulation analysis, the researcher tabulated the data to be analysed. The analysis and interpretation was then done by studying the tabulated data.

#### **3.5.3 Regression Analysis**

In regression analysis, the researcher have used two models. In model 1, from the information given in the returned back questionnaires, the researcher has attempted to establish a functional relationship between the perception of equity of an individual and the occupation, province of origin, sex and age bracket of the individual. In model I regression analysis, perception of equity of an individual respondent is the dependent variable and occupation, province of origin, sex and age bracket of the respondent is the independent variables .

In model 2 regression analysis, from the information given in the returned back questionnaires, the researcher has attempted to establish a functional relationship between the allocation of resources per Province and the perception of equity, income per Province, political inclination of the Province and poverty index per Province. In model 2 regression analysis, the allocation of resources per Province is the dependent variable while the perception of equity, income per Province, political inclination of the Province and poverty index per Province are the independent variables.

## CHAPTER 4 DATA ANALYSIS AND INTERPRETATION

### 4.0 Introduction

This chapter deals with data analysis and interpretation. It is subdivided into the following sub-headings:-descriptive statistics, responses, perception on equitable allocation of resources, factors that determine allocation of public funds, factor analysis and regression analysis.

### 4.1 Descriptive Statistics

The various respondents had different characteristics in terms of the Province of origin, the occupation, the age bracket and sex. These different aspects were captured by the questionnaire used for the study. Frequency distribution tables were used to show how the data collection approach used captured the desired data characteristics these are shown below:-

#### 4.1.1 Distribution of Respondents by Province of Origin.

The table below shows the distribution of respondents by their Province of origin It indicates the Provinces and frequency recorded for each Province. The frequencies are then converted to percentages to give a better indication of the distribution.

**Table 1: Distribution of Respondents by Province**

Province of Origin	Frequency	Percentage
Nairobi	10	5.7
Rift Valley	33	18.9
Central	57	32.6
North Eastern	4	2.3
Eastern	22	12.6
Western	21	12.0
Nyanza	18	10.3
Coast	10	5.7
<b>Total</b>	<b>175</b>	<b>100</b>

**Source: Research Data.**

From the above table it is evident that the majority of the respondents were from Central Province (32.6%) followed by Rift Valley Province (18.9%). This may be well explained by the proximity of these two Provinces to Nairobi which is the capital city. North Eastern registered the lowest number (2.3%) since it is far from Nairobi and inhabited mainly by pastoralists who tend to remain within their localities. Despite the questionnaires being distributed within Nairobi most respondents though living in the capital City have their origin in other Provinces.

### 4.1.2. Distribution of Respondents by Occupation

Respondents were in ten categories as shown in the table below. The frequency of each occupation is shown alongside the occupation. A percentage of responses for each occupation to the total responses are also shown in the table below.

**Table 2: Distribution of Respondents by Occupation**

<b>Occupation</b>	<b>Frequency</b>	<b>Percentage</b>
Teachers	20	11.4
Students	28	16.0
Preachers	4	2.3
Drivers	24	13.7
Civil Servants	15	8.6
Casual Labourers	8	4.6
Farmers	7	4.0
Entrepreneurs	9	5.1
Job Seekers	27	15.4
Professionals	33	18.9
<b>Total</b>	<b>175</b>	<b>100</b>

**Source: Research Data.**

Professionals recorded the largest response (18.9%) . This was due to better knowledge of the economic matters since they are better informed and easier than those people of other occupations in accessing more offices located within the city centre. There was difficulty in getting responses from Farmers (4%) and casual laboureres (4.6%) as many felt inadequate or had difficulty with the English language. Preachers recorded the lowest response since it was difficult to find them as most were tending to their respective flocks. Students having great curiosity also contributed greatly (16%).

### 4.1.3 Distribution of Respondents by Age Bracket

Respondents fell into four age brackets. These were 20-25, 26-30, 31-40 and over 41 years. Frequencies and percentages for each age bracket are shown in the table below.



**Table 3: Distribution of Respondents by Age Bracket**

Age Bracket in Yrs.	Frequency	Percentage
20-25	77	44
26-30	50	28.6
31-40	27	15.4
Over 40	21	12
<b>Total</b>	<b>175</b>	<b>100</b>

**Source: Research Data**

Respondents in the 20-25 age bracket made up the highest percentage (44%). This is because most young people are seeking employment and are also students and matatu operators. The youth are also the majority in the population accounting for about 60% of the total population. The over 40 years age bracket recorded least responses.

This may have been due to interviewer bias and also some in this category may retire and move to the countryside. Age brackets of 20-25 and 26-30 combined formed a massive 72% of the respondents.

#### 4.1.4. Distribution of Respondents by Sex.

The respondents' gender was also captured in the questionnaire and results are reflected in the table below:

**Table 4: Distribution of Respondents by Sex.**

Gender	frequency	Percentage
Male	132	75.4
Female	43	24.6
<b>Total</b>	<b>175</b>	<b>100</b>

**Source: Research Data**

Out of 175 respondents, 75.4% were male and 24.6% were female. This was however in contrast to the nation where the number of women is greater than that of men. This could be explained by the greater involvement of men in formal employment while other professions like those in the matatu industry are largely male dominated. Women have not been given equal employment opportunities to men hence this might have contributed to fewer women within working areas.

## 4.2 Responses

Responses from the 175 respondents are captured in this section. These responses relate to the perception as to equitable allocation of resources by the Kenyan Government and the importance of political inclinations, poverty level, natural resources available, commercial and administrative importance of a region, and GDP contribution as factors influencing allocation of public funds. The responses are highlighted below.

### 4.3 Perception on equitable allocation of resources

The responses to the question on whether the Government was perceived to allocate resources equitably were as follows:

**Table 5: Perception on equitable allocation of resources**

Perception	Frequency	Percentage
Yes	47	26.9
No	128	73.1
<b>Total</b>	<b>175</b>	<b>100</b>

**Source: Research Data.**

Out of the total responses received 73.1% perceive that public funds allocation in Kenya is inequitable while the remaining (26.9%) perceive that it is equitable. This is because they feel that they are not receiving their fair share of public funds.

## 4.4 Factors that determine Allocation of Public Funds.

Responses were received on the perceived importance of the highlighted factors in allocation of public funds. These responses were in a scale of 1-5 and the results were put in tables for respective factors as highlighted below:

### 4.4.1 Political Inclinations

Responses on the importance of political inclination as a factor influencing allocation of public funds are as shown by the table below:

**Table 6: Political inclination**

Scale	Frequency	Percentage
Not important at all	48	27.4
Not important	20	11.4
Indifferent	21	12.0
Important	37	21.1
Very Important	49	28.0
Total	175	100

**Source: Research Data**

The results are mixed reaction, This factor had 49% of respondents ranking it to be important and 39% not important while 12% were indifferent.

#### 4.4.2 Poverty Level

Responses on the importance of poverty level as a factor influencing allocation of public funds are as shown by the table below:

**Table 7: Poverty Level**

Scale	Frequency	Percentage
Not Important at all	38	20.0
Not Important	18	10.3
Indifferent	14	8.0
Important	36	20.6
Very Important	72	41.1
Total	175	100

**Source: Research Data**

A good percentage of Kenyans perceive this factor as important (62%) in allocation of public funds in Kenya, while 30% felt that it was not important at all. 8% of respondents were indifferent.

#### 4.4.3 Natural Resources available

Responses on the importance of natural resources available as a factor influencing allocation of public funds are shown in the table below:

**Table 8: Natural Resources available**

Scale	Frequency	Percentage
Not Important at all	17	9.7
Not Important	28	16.0
Indifferent	33	18.9
Important	40	22.9
Very Important	57	32.6
Total	175	100

**Source : Research Data**

Out of the responses got , it can be seen that natural resources in a given region plays an important (56%) role in allocation of public funds in Kenya. 26% showed that the factor was not important while 18% were indifferent.

#### **4.4.4 Commercial and Administrative importance**

Responses on the importance of commercial and administrative importance of a region as a factor influencing allocation of public funds are as shown in the table below:

**Table 9: Commercial and Administrative importance**

Scale	Frequency	Percentage
Not Important at all	17	9.7
Not Important	28	16.0
Indifferent	33	18.9
Important	40	22.9
Very Important	57	32.6
Total	175	100

**Source : Research Data**

Out of the response received a higher percentage of 63% ranked this factor as important, 23% as not important and 14% were indifferent.

#### 4.4.5 Population of Province

Responses on the importance of population of a province as a factor influencing allocation of public funds are as shown by the table below:

**Table 10 : Population of Province**

Scale	Frequency	Percentage
Not Important at all	29	16.6
Not Important	19	10.9
Indifferent	31	17.7
Important	47	26.9
Very Important	49	28.0
Total	175	100

**Source : Research Data**

According to this table 55% of the respondents ranked this factor as important in allocation of public funds in Kenya, 27% as not important and 18% were indifferent.

#### 4.4.6. GDP Contribution

Responses on the importance of GDP contribution of a Province as a factor influencing allocation of public funds are as shown by the table below:

**Table 11: GDP Contribution**

Scale	Frequency	Percentage
Not Important at all	20	11.4
Not Important	41	23.4
Indifferent	23	13.1
Important	48	27.4
Very Important	43	24.6
Total	175	100

**Source : Research Data**

This factor was ranked important by 52% of the respondents, not important by 35% and indifferent by 13%.

## 4.5 Factor Analysis

**Component Matrix**  
**Table 12**

	component	
	1	2
Poverty Level	0.727	- 0.458
Natural resources available	0.708	0.256
Commercial and Administrative	0.586	0.582
GPD Contribution	0.674	0.299
Population of Province	0.767	- 0.275
Political inclination	- 0.245	0.736

### Extraction Method : Principal Component Analysis

2 Component extracted.

To determine the principal factors from the ones identified in the hypothesis a factor analysis with matrix notation was carried out. The table above represents the results of the operation.

From the table it can be established that the poverty level and political inclination are the principal factors. This seems to be true given the following relationships that can be deduced from the analysis. Poverty level may be high where the population is high. This can be attributed to the pressure put by the population on the resources available and the infrastructure. Also an area with many poor people may be as a result of an area not being politically inclined hence they cannot receive political favours. Political inclination is an important variable which does influence allocation. From the analysis it can be deduced that where an area is politically inclined it will have less poor people. Also natural resources have minimal importance to attributed to the ability of those who have many resources can be able to influence the political progress but marginally. Therefore political inclination of a Province and poverty level of the Province are important factors in allocation of public funds.

## 4.6 Regression Analysis

### Model 1

$$P = 0.015Q_1 - 0.001Q_2 - 0.074Q_3 - 0.14Q_4 + 1.796$$

$$t\text{-test } (1.318) (-0.082) (-0.864) (-0.395) (10.805)$$

$$\text{Sig} \text{if. } (0.189) (0.935) (0.389) (0.693) (0.000)$$

Where

P = Perception of equity

Q<sub>1</sub> = Occupation

Q<sub>2</sub> = Province of Original

$Q_3 = \text{Sex}$

$Q_4 = \text{Age bracket}$

A model was derived to try to capture the perception of equity in the government allocation of public funds of Kenyans. The variables determined in the study to influence perception of equity are the occupation of the individual, the Province of origin, the sex and the age bracket. The values of the variables were generated from the questionnaires used in the study.

Where the perception of equity ( $p$ ) in the model above is 1, it indicates that an individual views that the allocation of government resources is equitable while 2 indicates an inequitable allocation of public funds.

### Assumptions

- Perception of an individual is based on the four variables used. All other factors that may influence perception were ignored.
- The sample is assumed to be representative of the views of the whole nation hypothesis testing could not be carried since the views of Kenyans are not known.

### Model 2

$$Y = 0.075X_1 + 0.918X_2 + 0.068X_3 - 0.183X_4 - 0.137$$

t-test	(0.459)	(4.689)	(5.678)	(-2.646)	(-0.485)
Signif .	(0.647)	(0.000)	(0.000)	(0.009)	(0.629)

Where:

$Y =$  Allocation of resources per Province in relation to total expenditure.

$X_1 =$  Perception of equity

$X_2 =$  Income per Province

$X_3 =$  Political inclination of the Province

$X_4 =$  Poverty index per Province

Another model was derived that estimates the allocation of public funds across Provinces in relation to total expenditure. It used the following variables to approximate allocation: perception of equity of the residents, income generated in the Province, political inclination of the Province towards the government and the level of poverty as determined by the poverty index.

The data used in deriving the model for allocation of resources was the allocation of monies by the government through the Kenya Roads Board to the Province. The amount was then related to the total allocation. This serves as a proxy for the government expenditure since there was no available data on government expenditure per Province.

The perception of equity was derived from the prior model. The data collected was used to estimate the perception of equity.

Income per Province was the income that was generated in the Province as data collected by KRA. This was related by the total income to get the contribution on or level of the income per Province to the total income in the country. This was a proxy for GDP Contribution per Province.

Political inclination was determined by the researchers based on their perception of political inclination per Province. While poverty index was from the Nation newspaper 29<sup>th</sup> April, 2007.

The purpose of the model was to try to determine whether the variables identified could be important elements in affecting allocation of government resources.

The results from the model would indicate how much a Province may receive of the national cake based on the variables used.

### **Assumptions**

1. The allocation of public funds by the government is assumed to be influenced by the factors identified in the model.
2. The factors in the study which were difficult to attach a numeric value adequately were ignored in the model and assumed to have only a persuasive value.
3. Political inclination of the Provinces was assumed to be reflected in the voting patterns and from the perception one receives from local Dailies and news reports.



## CHARTER 5 SUMMARY AND CONCLUSION

### 5.0 Introduction

This chapter deals with summary and conclusion. It is subdivided into the following sub-headings:- conclusions and recommendations.

#### 5.1 Conclusions

The study findings support that factors identified in the hypothesis are important in allocation of public funds in Kenya.

A good percentage (75%) of the Kenyans interviewed perceive resource allocation in Kenya to be inequitable.

Political inclination of a region to the government was found to be an important factor in the allocation of public funds. Through factor analysis the study was able to determine that political inclination is one of the two principal factors identified. This would indicate that region that supports the government of the day will receive a greater allocation of public funds. Population of a Province as a factor in the allocation of public funds was found to be important. Though not determined as a principal factor, its importance was none the less clear. An area with a large Population will thus receive more public funds than one with a relatively smaller Population. This is also supported by existing literature.

Commercial and administrative importance of a region was found to play an important role in allocation of public funds. Regions of greater commercial and administrative importance receive larger portions of public resources.

Natural resources availability in a region was also found to play an important role in allocation of public funds. Allocation of public funds will favour regions having more natural resources that can be exploited to those lacking or having relatively less abundance of the same.

G.D.P. contribution of Province was found to be important in allocation of public funds. Regions contributing more to the G.D.P. of the country receive more funds than those making a less contribution.

Therefore the identified factors affecting allocation of public funds were found to be important though political inclination of a Province to the government and poverty level were found to be principal factors.

#### 5.2 Recommendations

This study recommends the following:

- i. There should be more future studies that will increase the sample size to attempt to reach the entire Provinces so as to get a more representative sample. This will enable one to clearly generalize the findings to the entire Populace of Kenya.

- ii. Future studies could get peoples view concerning factors influencing public funds allocation and compare to the actual factors used by the government bureaucrats. This will help identify and may solve the divergent opinion between the common man and the bureaucrats.
- iii. More detailed research should be done on the other factors identified. Such factors include illiteracy, lack of education, corruption, nepotism,availability of funds,infrastructure, health, youth needs , education , religious affiliations and many more. This will form a thorough analysis on the factors that affect allocation of public funds.
- iv. Further research done should aim to capture a more representative sample of the population in terms of the gender and age brackets. Future studies should be done country wide to help capture well the gender and age brackets characteristics for more representative sample of the population. This will provide greater validity for generalization of findings.

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**APPENDICES****APPENDIX 1****LETTER TO THE RESPONDENTS**

**UNIVERSITY OF NAIROBI,  
COLLEGE OF BIOLOGICAL AND PHYSICAL SCIENCES ,  
SCHOOL OF MATHEMATICS ,  
P.O. BOX 30197-00100 ,  
GPO NAIROBI, KENYA.**

Dear-----

I am carrying out a study on “Factors Determining Allocation of Public Funds in Kenya.”

The questionnaire attached herewith is meant to gather information for this study from you. All responses will be confidentially treated. The results will be reported only in terms of entire population. Therefore do not provide your name in this questionnaire. You are only required to give the name of the Province you originate from, here in Kenya. You are kindly requested to respond to all items in the questionnaire.

Your positive response will be highly appreciated.

Yours sincerely.

**ODIRA LEONARD ODHIAMBO  
DEPARTMENT OF MATHEMATICS  
UNIVERSITY OF NAIROBI.**



## 6. G.D.P. Contribution of a Province to the national output.

[1] [2] [3] [4] [5]

List other factors that in your opinion are relevant in the allocation of public funds.

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**APPENDIX 3****Table 1: Road Allocation in Kenya 2006/07**

<b>PROVINCE</b>	<b>AMOUNT ALLOCATED</b>	<b>PROPORTION TO TOTAL</b>
Western	541,950,073	0.086537434
Rift Valley	1,120,932,330	0.178988088
Central	2,031,201,931	0.324338001
Nyanza	414,268,589	0.066149526
Eastern	320,393,641	0.051159775
Coast	699,411,881	0.1116806
North Eastern	435,876,096	0.069599767
Nairobi	698,573,993	0.111546808
<b>Total</b>	<b>6,262,608,534</b>	

**Source : Kenya Roads Board**



**Table 2 : Income Generated Per Province in Millions of Kenya Shillings 2006/07**

PROVINCE	AMOUNT	PROPORTION TO THE TOTAL
Nairobi	181,360.3	0.29
Central	82,185	0.132793252
Nyanza	59,982.7	0.096919119
Western	41,007.6	0.066259446
Coast	82,185	0.132793252
Rift Valley	119,408.2	0.192937923
Eastern	47,303	0.076431456
North Eastern	5,462.6	0.008826385
Total	618,894.4	0.996960832

Source : Kenya Revenue Authority

**Table 3 : Political Inclination**

PROVINCE	POLITICAL INCLINATION
Nairobi	1
Central	3
Nyanza	1
Western	2
Coast	2
Rift Valley	1
Eastern	3
North Eastern	2

**Table 4: Poverty Index**

PROVINCE	POVERTY INDEX
Nairobi	0.21
Central	0.30
Nyanza	0.48
Western	0.52
Coast	0.70
Rift Valley	0.49
Eastern	0.51
North Eastern	0.74

Source : Nation Newspaper 29<sup>th</sup> April, 2007

**TABLE 5 MODEL PERCEPTION OF EQUITY****Coefficients a**

Model	Unstandardized coefficients		Standardized coefficients	t	Significance
	B	Std Error	Beta		
1(constant)	1.796	0.166		10.805	0.0000
Province of origin	-0.001	0.018	-0.006	-0.082	0.935
Sex	-0.074	0.085	-0.066	-0.0864	0.389
Age Bracket	-0.014	0.035	-0.030	-0.395	0.693
Occupation	0.015	0.011	0-101	1.318	0.189

**a. Dependent Variable: Allocation of equitable resources**

**TABLE 6: REGRESSION MODEL OF ALLOCATION OF PUBLIC FUNDS****Coefficients a**

<b>Model</b>	<b>Unstandardized coefficients</b>		<b>Standardized coefficients</b>		
	<b>B</b>	<b>Std Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig</b>
1 (constant)	-0.137	0.283		-0.485	0.629
Perception of equity	0.075	0.164	0.032	0.459	0.647
Income per province	0.918	0.196	0.461	4.689	0.000
Political inclination	0.068	0.012	0.540	5.678	0.000
Poverty Index	-0.183	0.069	-0.246	-2.646	0.009

**a Dependent Variable: Government Expenditure**

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