DETERMINANTS OF INVESTMENT DEMAND IN THE INFORMAL SECTOR:

A CASE STUDY OF SHOE MAKING IN KIBERA, NAIROBI

BY

TIMOTHY CHRISPINUS OKETCH
ECONOMICS DEPARTMENT
KENYATTA UNIVERSITY

RESEARCH PAPER SUBMITTED TO THE DEPARTMENT OF ECONOMICS, KENYATTA UNIVERSITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN ECONOMICS

JULY 1999

DECLARATION

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

TIMOTHY CHRRISPINUS OKETCH

C50/8096/97

DEPARTMENT OF ECONOMICS

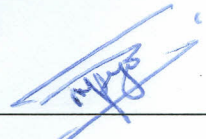
This research paper has been submitted with our approval as university Supervisors.

DR. MARTIN NYONGESA ETYANG'

SENIOR LECTURER

DEPARTMENT OF ECONOMICS

KENYATTA UNIVERSITY



MR. KENNETH OPIYO OLOO

LECTURER

DEPARTMENT OF ECONOMICS

KENYATTA UNIVERSITY.

DEDICATION

This research paper is dedicated to my parents and my maternal grandmother Fulumena who laid my educational background through their willingness to provide resources that have enabled me achieve my educational goal.

ACKNOWLEDGEMENTS

I owe much gratitude to my supervisors, Dr. Etyang and Mr. Oloo. Their suggestions, comments, guidance, encouragement, and the many hours they devoted to the improvement of this research paper are greatly appreciated. My thanks are also to Mr. Oloo who aroused my interest to venture into research of the informal sector.

I am equally indebted to Mr. Obere who, apart from reading my scripts and making useful suggestions, developed in me the skills which were necessary in modelling and data analysis for this project. I am also indebted to lecturers of Economics Department for their advice and constructive comments, especially Mr. Masya, Mr. Gachanja, Mr. Wawire, Mr. Korir, Mr. Ombuki, Mr. Kinyanjui and Mrs. Njaramba.

This study was made possible through a scholarship awarded to me by Kenyatta University without which it would not have been possible to pursue my Master of Arts course. Special thanks go to Miss Josephine Kamau, Miss Barasa, Mr Ogino, Mr Opondo Mr. Magoma and Mrs. Odongo who assisted me in various ways. To my classmates Omolo, Maingi and Hellen, I say thanks for their assistance through discussions and encouragement. Finally, many thanks go to Caroline of Kenya Rural Enterprise Programme (K-REP) who assisted me in accessing information on the informal sector.

However, any shortcomings in the paper remain my responsibility.

GLOSSARY

BoP.....Balance of Payment

GDP.....Gross Domestic Product

GEMINI.....Growth and Equity through Micro Enter prise and Institutions

GOK .....Government of Kenya

ILO.....International Labour Organisation

IYBK.....Improve Your Business Kenya

KIE .....Kenya Industrial Estates

KIM .....Kenya Institute of Management

K-MAP.....Kenya Management Assistance Programme

K-REP .....Kenya Rural Enterprises Programme

Ksh .....Kenya Shillings

MEC .....Marginal Efficiency of Capital

MSEs .....Micro and small scale enterprise

NCCK.....National Council of Churches of Kenya

NGOs.....Non-governmental organizations

SMEs .....Small and micro enterprises

SSEs .....Small scale enterprises

USAID .....United States Agency for International Development

ROSCAs.....Rotating Savings and Credit Associations

TABLE OF CONTENTS

DECLARATION I

DEDICATION I

ACKNOWLEDGEMENTS II

GLOSSARY III

LIST OF TABLES VII

ABSTRACT VIII

CHAPTER I 1

1.0.0 INTRODUCTION. 1

1.1.0 Background 1

1.1.1 Definition of the Informal Sector. 3

1.2.0 Investment in the Informal Sector. 4

1.3.0 Role of the Informal Sector in the Kenyan Economy. 5

1.4.0 Research Problem. 6

1.5.0 Objectives. 8

1.6.0 Significance of the Study. 8

CHAPTER II 9

2.0.0 LITERATURE REVIEW. 9

2.1.1 Literature on Investment. 9

2.2.0 Literature on investment in the Informal Sector in Kenya 12

CHAPTER III 19

3.0.0 METHODOLOGY. 19

3.1.0 Modeling Investment Function. 19

3.1.2 Assumptions. 19

3.2.0 Theoretical Model. 19

3.3.0 Analytical Model. 20

3.5.0 Definition and Measurement of Variables 22

3.6.0 Overview of the Area of Study. 23

3.7.0 Data and Sample Statistics. 24

CHAPTER IV .....

4.0.0 DATA ANALYSIS AND INTERPRETATION. 26

4.1.0 Descriptive Statistics. 26

4.1.1 Investment Expenditure 26

4.1.2 Savings 27

4.1.3 Education profile of entrepreneurs. 28

4.1.4 Age of the entrepreneurs 29

4.1.5 Weekly Output 29

4.1.6 Business Size 30

4.1.7 Training level attained by entrepreneurs in years 31

4.1.8 Methods (sources) of skills acquisition 31

4.1.9 Dependency level 32

4.1.10 Non-Financial Services *33*
4.1.11 Transfer Payments *34*
4.1.12 Problems and constraints faced by entrepreneurs *35*
4.1.13 Entrepreneurs Experience *36*
4.1.14 Density of shoe-making enterprises *36*
4.1.15 Age distribution of the Business. *37*
4.1.16 Credit *37*
4.1.17 Seasonality of sales *38*
4.2.0 Regression Results *39*
4.2.1 Interpretation of the regression results *41*
CHAPTER V **50**
SUMMARY AND POLICY RECOMMENDATION 50
5.1.0 Summary and Conclusions. *50*
5.2.0 Policy Recommendations *51*
BIBLIOGRAPHY **59**
APPENDICES *63*

LIST OF TABLES

Table 1.1 Investment expenditure in 1998 26

Table 1.2: Distribution of Savings 27

Table 1.3: Entrepreneurs' education level in years 28

Table 1.4: Age distribution of the entrepreneurs in years 29

Table 1.5: Weekly output 30

Table 1.6 Distribution of businesses by category of employees 30

Table 1.7 Level of Training 31

Table 1.8: Skills Acquisition 32

Table 1.9: Number of dependants 33

Table 1.10: Non-financial services received 33

Table 1.11: Transfer payment in Kshs 34

Table 1.12: Constraints faced by the entrepreneurs 35

Table 1.13: Entrepreneurs level of experience in years 36

Table 4.2 (a) Regression results: Linear model 39

Table 4.2 (b) Regression Results: Log-linear Model 40

ABSTRACT

The informal sector has an important role to play towards the industrialization process and generation of employment opportunities. The sector also provides training to potential employees for both the informal and formal sectors, thereby helping to improve the quality of life for those who would otherwise be without any source of livelihood. Also, the informal sector has a capacity to mobilize investments and produce affordable goods and services to the ever-increasing population. For these reasons, various stakeholders are targeting the sector so as to enhance the potential benefits. Despite these efforts, the sector has not become the expected solution to Kenya's developmental problems.

The concern of this study was to investigate the determinants of investment in the informal shoe-making sub-sector in Kibera area of Nairobi Province. Data was collected from a sample of 40 shoemakers in the area. Both linear and log-linear multiple regression models were specified and estimated and the results interpreted based on the log-linear model, which was adopted as the suitable one for analysis because it had more significant variables, and higher R^2 and F-statistics. The results suggest that output of the firm; price of investment goods, entrepreneurs' dependants and education level acquired by the entrepreneur are the significant determinants of investment in the sub-sector. Contrary to a *priori* expectations, the coefficients of transfer payments, training, accessibility of the enterprise was negative. Further, the study found that none of the respondents had benefited from the *assistance package* provided by the government, donors, and other stakeholders. Thus, these shows that the promotional services aimed at the sector do not reach the entrepreneurs in the sub-sector. This paves way for various policy recommendations.

CHAPTER I

1.0.0 INTRODUCTION.

1.1.0 Background.

One of the Economic and social problems Kenya has faced since the 1970s is unemployment, which has been attributed to high population growth especially in urban areas. One of the causes of this according to ILO (1972) is that individuals, who could not make a living in the rural areas or fulfil their aspirations there, migrated to towns to seek employment in order to earn a living. This resulted in rapid growth of the urban population, which could not all, be employed in the formal sector. As a result, attention turned to informal sector as part of the solution to the problem[1]. For instance, the government in Sessional Paper No.2 of 1992 on Small-Scale and *Jua kali* Development in Kenya reiterated that the sector has a major role in creating employment for the growing labor force which is expected to increase by approximately 27.2 percent by the year 2000.

In order to expand the informal sector, the ILO report recommended: increasing accessibility to credit facilities; establishment of special assistance institutions; education and training at all levels within and outside the sector; re-organization of informal sector enterprises in order to provide improved inputs; infrastructural support; Technical aid and research to develop, encourage production and to rationalize output. Other than expanding the informal sector, these recommendations were aimed at increasing output and employment through changing quantity and form of investment in the sector[2].

Following the ILO report, the Kenya Government, as stipulated in various official

---

[1] ILO, (1972), pp 10

[2] Ibid, pp 223-4

documents, coordinated its relevant ministries[3] with Non Governmental Organizations (NGOs that provide assistance package to the informal sector) and Community Based Organizations (CBOs) to enhance expansion and growth of the sector in various ways. These included training[4] (through village polytechnics, technical institutes, workshops and seminars); extension services; physical structures (sheds such as Nyayo sheds, NCCK sheds-Jogoo road); land; electricity and water; marketing (through advertisement, trade fairs and exhibitions); credit facilities (through Kenya Commercial Bank *Jua kali* loan scheme, Kenya Industrial Estate small enterprises loan scheme, Kenya Women Finance Trust, Kenya Rural Enterprise Programme, Barclays Bank Development Fund, among others); construction of access roads to co-ordinate the activities in the sector[5] (see also Oloo, 1994; Oketch,1995). These promotion services to the informal sector have resulted in the acquisition of skills and development of entrepreneurship among the informal sector entrepreneurs (Oketch,1995).

Despite the government and other stakeholders promotional exercise to the informal sector, a GEMINI of 1995 found that the informal sector was experiencing rapid turnover with many businesses getting started and at the same time others going out of business (see also Economic Survey, 1997). This endless turnover of entrepreneurs and their employees was attributed to low returns for re-investment. These low returns were due to: lack of capital (both physical and financial); lack of effective demand for the informal sector goods and services;

---

[3] These ministries include ministry of planning and National Development, Research and Technology, Labour, Foreign Affairs, Information and Broadcasting, Finance and The Office of the President.

[4] Training to the informal sector entrepreneurs is in various aspects of trade disciplines including: Technical skills upgrading, Product design and development, Manufacturing precision and quality control, Costing and pricing, Business management, Personnel management, Book keeping and cash flow, Element of work study and time management, Store keeping, Marketing habits and concepts.

[5] Development Plan 1989-93; pp 164-68; Economic Survey, 1995, PP 58.

lack of entrepreneurial skills and high input prices, among other factors. In a related study, Aleke (1992) found that the entrepreneurs in the sector were constrained by shortage of working capital and fixed capital; technical and management skills; lack of demand for their products, among other factors.

1.1.1 Definition of the Informal Sector.

There have been controversies over the definition of the informal sector and no single definition has been universally accepted. In the ILO (1972) Employment Mission Report, the informal sector was defined as that portion of the urban economy that escapes enumeration in the government's official statistics. Leys (1975) defined the sector as a system that is labor-intensive and is promoted by lack of land in rural areas and lack of employment opportunities in urban areas. Aleke (1992) on the other hand, defined the informal sector as an activity that uses less capital per worker employed than what is generally used in the modern sector.

The Kenya government defines the informal sector as semi-organized and unregulated activities largely undertaken by self-employed persons or employers of a few workers in open markets, market stalls, undeveloped plots or on street pavements of urban centers. According to the 1997 Economic Survey, the sector is more labor-intensive than the formal sector, it is easy to enter, exit and create jobs, and the sector requires a low initial capital to take off, and promotes the growth of other sectors in the economy[6]. In addition, the sector relies more on indigenous (local) resources and uses little specialized skills mostly acquired outside the formal school system.

The informal sector is referred to by different names by different authors. Other names for the informal sector are small enterprises (which include all firms with 50 workers and

[6] Economic Survey, 1997; PP 72-3

below) and micro enterprises (which refers to enterprises with 10 workers and below). In this study, the terms informal sector, micro and small enterprises (MSEs) and small-scale enterprises (SSEs) are used interchangeably to mean the informal sector. The sector is also referred to as *Jua Kali* or scorching sun because most of its activities are carried out in open unsheltered places. The term *jua kali* continues to be used even for activities carried out in permanent structures. For purposes of this study, an informal shoe-enterprise is defined as any business enterprise that produces and distributes footwear with employment level of less than 20 workers.

1.2.0 Investment in the Informal Sector.

Investment in the informal sector can be categorized into capital formation, initial investment and overhead investment. Capital formation, in this context, includes investments that does not change capital stock. This category of investment can be referred to as operating expenses. Examples of these investments in this sub-sector include shoe-spray polish, kerosene, shoe polish, among others.

Initial investment is the value of investment entrepreneurs requires to start day-to-day firm operations. It is incurred by entrepreneurs entering the sector for the first time. Examples of initial investment in the informal shoe sub-sector include sewing machine, *jamboo*, pliers and scarving knife. High initial investment reduces the ability of the sector to expand because potential entrepreneurs will be discouraged by the high initial costs.

Overhead investments are those investments that affect non-physical variables. These include education, business advisory services, technical and management training and all

investments that occur at macro level such as water, electricity, access roads, sewerage, etc. In most cases, the costs of overhead investments are usually incurred by the government. However, in some cases, entrepreneurs have had to provide themselves with some of these investments (electricity and water installation).

1.3.0 Role of the Informal Sector in the Kenyan Economy.

The informal sector enterprises are identified and considered in many government documents notably Development plans (1989-1993; 1997-2001), Economic Surveys (1997, 1998), Sessional papers No.1 and No.2 of 1986 and 1992 respectively to be a major source of employment for the next decade. According to Sessional paper No.2, the sector is expected to provide 75 percent job opportunities in the economy by the year 2001. Out of these, 50 percent is expected to be provided by rural informal enterprises over the same period.

A study conducted by Growth and Equity through Micro Enterprise and Institutions (GEMINI) in 1995 on the informal sector, the sector was found to have contributed an annual employment growth of 10 percent per annum to the economy. In addition, the study found that small-scale enterprises accounted for 12-14 percent of the economy's GDP in that year. Further, the study found that informal sector participation alleviated household poverty with some households being raised above the poverty line.

The informal sector provides goods to the agricultural sector. Abuodha (1989) observed that several implements used in the agricultural sector such as hoes, *pangas*, rakes, wheelbarrows and spades are manufactured in the informal sector. The sector also maintains other agricultural capital and equipments such as tractors, lorries, ox-drawn ploughs and farm

carts. Further, the inter-linkages between the formal sector and informal sector are more complicated[7]. According to Abuodha (1989), the formal sector provides capital, technology and trains informal sector entrepreneurs (see also Esipisu, 1992). The informal sector also acts as a training ground for acquiring trade skills and entrepreneurship (USAID, 1990; Oketch, 1995).

The expansion of small non-farm manufacturing enterprises establishes a balance in income distribution, reduction in foreign control of industry and reinforces sectoral linkages. Further, the informal sector enterprises are expected to reduce dependency on imported inputs by encouraging the use of local resources which consequently helps in narrowing the balance of payment (B.O.P) deficit (Development Plan, 1989-93).

According to the 1997 Economic Survey, the informal sector appears to be fulfilling its goals as stipulated in the Sessional paper No.2 of 1992. For instance, the sector accounted for 61 percent of persons engaged in employment in 1996. Before the year 2001, the urban informal sector alone is expected to create about 700,000 jobs an equivalent of 26 percent of total jobs to be created during this period. This shows that the urban informal sector will be a source of earnings to a large proportion of the urban population.

1.4.0 Research Problem.

Informal sector enterprises in Kenya have attracted considerable attention due to their potential to contribute to the development of the economy. The sector contributed between 12-14 percent of the economy's GDP in 1995 (GEMINI, 1995). Still, the sector is projected to employ 14 million people by the year 2000[8]. The informal sector has the potential to promote

[7] See Input-Output in ILO, 1972; PP 506-8.

[8] Sessional Paper No. 2, pp.4

the degree of indigenous growth of the economy by reducing dependency on imported inputs. Further, the sector is expected to improve the distribution of income in many directions such as gender, location and through the inter-linkages between the sector and other sectors of the economy. Further, the sector is seen as an important stage in making Kenya an industrialized nation by the year 2020 through technical and management skills development (Development Plan, 1997-2001).

Given the important roles the sector play, it has attracted the attention of various stakeholders who have intervened in the sector through provision of various promotional services. These include the provision of electricity, construction of rural access roads, allocation of land for carrying out informal sector activities (e.g. NCCK sheds, Nyayo sheds etc), provision of financial support (e.g. KCB Jua kali loan Scheme, KIE *Jua Kali* loan scheme, Barclays Bank *Jua Kali* loan scheme, etc), technical and management training (through village polytechnics and *Harambee* Institutes of Technology), business advisory services[9], among other services (see Oketch et al., 1995; Economic Surveys,1995-7).

However, despite the promotional services to the informal sector, a study by Joan (1993) on informal shoes making sub-sector found that the entrepreneurs were constrained by fixed capital, lack of finance, lack of business premise, lack of tools and equipment, low demand, technical and management skills, raw materials, among other factors. A need therefore arises to find out whether the promotional services aimed at the informal sector reach the informal shoe-making sub-sector and to investigate determinants of investment in the sub-sector. This will bridge the existing knowledge gap about the factors that affect investment in

[9] Business advisory services are in terms of Project formulation, implementation, operation, monitoring and evaluation.

the informal shoe-making sub-sector.

1.5.0 Objectives.

The objectives of the study were:

(a) To determine factors that affect investment in the informal shoe-making sub-sector.

(b) To determine whether the promotional services aimed at the informal sector reach the informal shoe-making sub-sector.

(c) To make recommendations on how to promote the informal shoe sub-sector in Kenya based on the study results.

1.6.0 Significance of the Study.

A study on investment in the informal sector in Kenya is important for various reasons. First, the study acts as a reference material for those interested in conducting research on the informal sector. Second, the study provides information on the factors that influence investment decisions in the informal sector. This information is vital to policy makers in assessing the appropriateness of the prevailing policies and in the formulation of new policies favourable to the sector.

Lastly, the information provided by the study is deemed vital to Non-governmental organizations (NGOs) and other stakeholders in designing assistance *packages* and programs towards the informal sector.

CHAPTER II

2.0.0 LITERATURE REVIEW

In this section, we review theoretical literature on investment and informal sector.

2.1.1 Literature on Investment

According to Keynes (1936) in his present value (PV) model of investment, a firm should rank investment projects by present discounted value of their income streams. He contended that a firm would maximize profits by investing in projects with positive present value. He asserted that an increase in the market rate of interest reduces the present value of each investment project and consequently the firm's investment level. Keynes concluded that investment was a function of interest rate (i.e Inv = f(r) and that $\Delta Inv/\Delta r<(0)$. Despite the above, Keynes' present value criterion had a problem since calculating or obtaining future returns for a combination of investment goods at the present is unrealistic.

In 1938, Keynes developed the marginal efficiency of capital (MEC) as an improvement of the present value criterion. He defined marginal efficiency of capital of an investment project as the rate of interest that will discount the PV of the project to zero. According to the criterion, there may be more than one cost of capital or rate of interest facing the firm depending on sources of the firm's investment funds. The various costs of capital affect the firm's decision to invest. This is because entrepreneurs get their funds from different sources, each charging different interest rate. However, MEC criterion was in no overview way an improvement of the PV criterion since it also depended on future returns and presents value concepts. Calculating future returns and present value for a combination of investment goods is tedious. Also, MEC analysis excluded determinants of investment demand variables autonomous of interest rate such as

demand for output and entrepreneurs preferences. Thus, Application of Keynes model as an investment determination analysis and in particular, to informal sector is questionable. This is because entrepreneurs particularly in less developed countries including Kenya where financial markets are not so well developed do not respond to interest rates when making investment decisions.

Hicks (1950) on the other hand developed fixed accelerator model of investment in which he asserted that the rate of investment is proportional to changes in the economy's output. He noted that higher levels of output would lead firms to demand larger stocks of capital given a certain technology. He specified desired capital stock as a multiple of the level of output specified as $K^d_t = \beta Y_t$, $\beta>o$; where K^d_t was defined as desired capital stock, Y_t as output at time t and β as the capital-output ratio. In the model, net investments was assumed to be the difference between the desired capital stock and the stock of capital inherited from the previous period given as $Inv_t = K^d_t - K_{t-1}$, where Inv_t and K_{t-1} were specified as investment at time t and capital stock inherited from the previous period respectively. Capital stock inherited from the previous period was equated to the desired capital stock based on income in the previous period (t-1), that is, $K_{t-1} = K^d_{t-1} = \beta Y_{t-1}$, where Y_{t-1} was defined as income in the previous period. From this specification, Hicks modified and specified investment function as $Inv_t = \beta(Y_t - Y_{t-1})$ which is equivalent to $Inv_t = \beta\Delta Y_t$. Hicks further contended that the level of investment depends on the rate of change of output expressed as $\beta=Inv_t/\Delta Y_t$. By this, he assumed that the difference between the desired level of capital stock (k_t) and the previous period capital stock (k_{t-1}) was achieved within one time period (t). However, in reality this difference could be increasing as other factors increase desired level of capital stock or vice-versa. In addition, he assumed a

situation of full employment of resources, which is not applicable in developing countries, and by extension to the informal sector.

In 1954, Chenery and Koyck developed the flexible accelerator model as an improved version of the Hicks fixed accelerator model by incorporating adjustment lags. They specified the model as $Inv_t = \beta 1(\beta Y_t - \beta Y_{t-1})$ where $\beta 1$ measures the speed with which the gap between the two is closed and it is a choice variable to the firm that is influenced by credit conditions, rate of interest and tax conditions. Although Chenery and Koyck model was an improved version of Hicks' model, the adjustment lag is simply a mathematical device with no basis in economic theory.

In 1967, Lucas introduced the user's cost concept into the demand for investment function in which he identified both external and internal costs of using capital. He specified investment function as $I = I(Y,C,P) + sK$ where I,Y,C,P,s,K and sK were defined as investment, output, user's cost, price of investment good, depreciation adjustment, total capital stock and total value on depreciation respectively. This model was more realistic than Keynes' models since in addition to interest rates, he incorporated other factors such as price of investment goods, depreciation and output which are more realistic as investment determinants.

Tobin (1965) in his liquidity theory of investment argued that the only bottleneck to investment is the sources of funds. He asserted that the supply of investment schedule becomes very steep at the level of investment that exhausts the supply of internal funds. He specified investment function as $K_t = e^{Lt}$ where $\dot{K}_t$ was defined as the desired capital stock at time t while L was defined as the liquidity position of the firm. The model incorporates the firm's net worth which if given formal sector firms and a well developed monetary system can be estimated. In

addition, it incorporates how fast the firm in question can change its physical assets to cash. Despite the above, measuring the liquidity position of a firm in the informal sector is difficult. On the other hand, Tobin (1965) in *q* theory argued that investment is a function of equity value of capital and replacement cost of the physical. He contented that the higher the equity of the physical capital compared to its replacement cost, the greater the incentive to invest in physical capital while the lower the valuation of capital in the stock market compared to its replacement cost, the greater the incentive to invest in already installed capital rather than undertake new installations. He specified *q* model as $q = r_p/r_t$ where r_p was defined as expected rate of profit while r_t was defined as the rate of return of capital in the stock market. Incorporating the *q* theory into investment function, he specified investment function as: $I_t = q(r_p,x,r_t)$ where r_t, r_p and x were defined as rate of return of capital in stock market, the expected rate of profit and capital labour ratios respectively. Tobin's *q* theory is applicable in highly developed money markets and where full knowledge of goods market exists. This is far from true for Kenya's informal sector. It is hoped that with time such variables like expected rate of profit and rate of return of capital in the stock market can be included.

2.2.0 Literature on investment in the Informal Sector in Kenya

In this sub-section, studies on the informal sector as done by other researchers in Kenya are reviewed.

Ng'ethe (1987) found that initial investment in the informal sector was financed by personal savings which accounted for an average of 80 percent while the remaining 20 percent was financed by advances from friends, relatives, retirement and terminal benefits and transfers.

This study was supported by the World Bank study of 1994 which found that most informal sector entrepreneurs finance their production by retained earnings, household savings, advances from customers and overdrafts from suppliers and creditors. However, savings were found to constitute the largest percentage.

Mukala (1996) found savings to be negatively related to investment and statistically significant. The negative relationship between investment and savings was attributed to the entrepreneurs appropriating the savings on other forms of investments such as human capital (education, health, and basic necessities) so that less of it is available for investment in physical capital.

According to Waud (1980), business firms are motivated to invest by the expected profits. Thus, business firms would invest in capital goods only if they anticipated the investment in question to yield profits. Also, Perlman (1989) found that a firm would undertake an investment if it expected an income stream in the future. Consequently, the expected income stream affected the investment level, which in turn is affected by availability of investment funds.

Wahome, et al. (1989), found age to be an important determinant of investment in the informal sector. They asserted that while young people are kept away due to lack of initial capital required to establish an enterprise and low attitude towards the sector old people appear much responsive and willing to invest in the sector. Mukala (1996) who found the coefficient of entrepreneurs' age to be positive supported this study. She contended that as one grows old, he/she becomes more responsible. Thus, there is a high probability of increasing expenditure on capital goods so as to expand his/her business to meet the many responsibilities of ageing. In

related studies, Gitobu (1989), Marris (1968), Wahome (1989) asserts that, when many rural entrepreneurs are perceived as successful, they are expected to help needy relatives. This affects profit negatively and as a result, there is very little retained earnings for further investments. The study incorporated this variable to determine its relative effect on investment. This is because in all the studies, no attempt was made to determine the relative effect of this variable.

Harris (1989) found education to be a significant determinant of investment in the informal sector. He noted that education was necessary as it opened one's eyes to the needs and practices of others in different societies. He contended that the educated are able to assess the needs of the people and tailor their business activities to suit them unlike the uneducated. Mukala (1996), on the other hand, concluded that entrepreneurs with higher levels of education have better skills and may be investing in more advanced technology instead of tools being used in the informal sub-sector.

Page, et al. (1984), observed that small scale enterprises (SSEs) were faced with weak aggregate demand, competition from subsidized prices of big investors (through investment incentives), inflation and overvalued exchange rates. They recommended that the government should formulate policies that would help create a conducive and enabling environment necessary to stimulate aggregate demand of informal sector products. In a GEMINI study of 1993, small-scale enterprises were found to be constrained by low demand in the market; lack of access to inputs (raw materials); high prices of factor inputs and high interest rates charged by different kinds of moneylenders. The study further found that macro economic variables such as devaluation of currency, inflation, taxation and licensing affected the operation of these enterprises. This was consistent with the study by Page, et al. (1984). However, in the two

studies, no functional relationship was developed to determine the relative effect of each variable. Ng'ethe, et al. (1987) concluded that the major limitation to small-scale enterprises (SSEs) was lack of demand for their goods and services. They recommended raising of agricultural incomes so as to increase demand for SSEs products, which would stimulate growth.

Oketch, et al. (1991), found that six months after the SSEs were given credit, average sales increased but at a lower rate. They attributed this to stiff competition in the sub-sector caused by the large influx of many entrepreneurs since one can enter the sector even with low education and technical skills. On the other hand, Odera (1989) asserted that potential for growth and development of the informal sector exists. She contended that the local market needed to be expanded beyond the location of the enterprise whilst the export market needs to be tapped. She, further, pointed out that participation in trade fairs and exhibitions, locally and abroad, would help in achieving high sales, and hence, growth. This would, consequently, stimulate investment in the sector. Also Aboagye (1986), identified insufficient demand as one of the major constraints on the expansion of the informal sector in Kenya. He partly attributed this to lack of an effective marketing strategy. He concluded that failure to keep records leads to wide discrepancies between sales expectations and what is sold.

McCormick (1988), noted that demand for small-scale manufactured goods affected both the growth rate and composition of output. She found that SSEs faced the problems of lack of capital, erratic supplies and uncertain demand. She recommended that the SSEs be assisted to overcome these problems because they constitute the livelihood of many families and they provide simple consumer goods at reasonable prices. In concluding, she observed that the

enthusiasm over the opportunities in SSEs at the national level, perhaps, exaggerate their potential. Levy (1993), Ng ethe and Wahome (1989), UNICEF (1990), studies found that most entrepreneurs had problems in raising initial capital needed to establish business. This finding was consistent with the ILO/SIDA evaluation report of 1986, which found that banks and other financial institutions are unwilling to lend money to ventures such as SSEs since they are perceived as risky investments.

Harper (1984) emphasized that lack of finance was the major constraint to the SSEs followed by lack of effective demand for their products, a factor, which was not emphasized by Page, et al. (1984). He suggested that advertising by the SSEs should be intensified, and the quality and variety of products improved according to market needs. He concluded that the government policy should support and decrease harassment of informal sector entrepreneurs by the government and local council officers. Aleke (1991) agrees with Harper. However, he notes that different informal sector enterprises require different kinds of assistance packages that according to him should be based on need assessment.

Abuodha (1989) found training level attained by an entrepreneur to have a positive effect on investment expenditure. The implication of this was that, the higher the level of training an entrepreneur had acquired, the higher the incentive to invest in the sector's activities. This was supported by the GEMINI (1993) study that asserted that training is an important component in SSEs development. According to GEMINI, training covers business management and entrepreneurship, development of knowledge and skills.

Kibas (1995) noted that the major barrier to expansion of SSEs was lack of working capital. He concluded that if loans were extended to them, the barrier would be minimized and

this would allow for expansion and growth in production, which would, then, stimulate investments. Mukala (1996) who concluded that the government should give credit to small-scale enterprise at a discount, thereby encouraging them to borrow and increase their investments supported Kibas (1995) study. She, however, cautioned that if possible, credit should be given in kind as most entrepreneurs who receive loans profligate on other needs other than those related to business such as school fees, health expenses.

Kiriti (1986), found that entrepreneurs in the informal sector needed to be supported by provision of stable sites since most of them were found to be operating under instability and in open air spaces. She, further, pointed out that there was lack of sufficient aggregate demand for goods and services offered by the mechanics. This was consistent with Wahome et al., 1987; GEMINI, 1993; Oketch, et al.1995; Odera, 1989; Aboagye, 1986. She recommended that there was need for the entrepreneurs to keep records of their performance, and formation of co-operatives that would help in purchasing input at wholesale prices to reduce the role of middle-men who distort prices of raw materials and factor input in general.

Many authors (see for example Yambo, 1991; Liedholm, et al., 1992) have attempted to identify some of the constraints facing the small-scale entrepreneurs. Nearly all these studies identified the same set of bottlenecks. Yambo (1990) identified lack of adequate business and technical skills and investible capital as being the major problems facing the jua kali operators. Other Studies (Parker, 1992; Oketch and Parker, 1991; Parker and Aleke-Dondo, 1991) identified the same constraints as being responsible for inefficiency or lack of competitiveness among the small and micro-enterprises.

Joan (1993) in her study of 204 randomly selected shoe-makers in Kibera (Nairobi)

found that most entrepreneurs were constrained by fixed capital, tools and equipment for making new shoes, working capital, raw materials for making new shoes, demand shortages, size of the premise, proximity of the area and high prices of factor inputs. Though this survey was representative of the population of interest, the observations could not be quantified and no functional relationship was developed.

Abuodha (1989) found that output was a significant determinant of investment in the informal sector. He asserted that output affected investment by determining desired level of capital stock and income, hence, the savings through which investment is financed. However, savings were found to be insignificant determinant while credit availability was found to be significant. In addition, he found profits, income, and market size to be determinants of investment. He concluded that insufficiency of funds was the most significant determinant of investment in the informal sector.

In a related study, Mukala (1996) agrees with Abuodha that credit is a significant determinant of investment in the informal sector but unlike Abuodha, she concluded that prices of investment goods was the most significant determinant of investment.

In a nutshell, considerable empirical work has been carried out on the informal sector. This is probably due to the important role the sector plays in the economy.

CHAPTER III

3.0.0 METHODOLOGY.

3.1.0 Modeling Investment Function

In this section we present the theoretical framework and the analytical model that was estimated in an attempt to achieve the objectives of the study.

3.1.2 Assumptions

The study assumed the following in order to develop the model

1. The unit of analysis was the firm in which labour and capital are the main factors of production.
2. The firm is competitive that is, it is a price taker in all markets.
3. Depreciation is a fixed proportion of the capital stock at the beginning of the year.

3.2.0 Theoretical Model

The unit of analysis in the study is the firm. Firms will be motivated to invest by the expected returns to the factors of production. Hence, firms will invest if they anticipate such investment will yield high returns. Further, a firm will undertake an investment if it expects an income stream from that investment in the future. This expectation affects the investment level, which in turn is affected by the cost of funds.

In deciding how much capital they will use in production, firms compare the value of the marginal product of capital with user cost of capital. The value of marginal product of capital is the increase in value of output obtained by using one more unit of capital while the

user cost of capital is the cost per period of using that capital stock. The firm will keep investing until the marginal value of output of capital is equal to the cost of using that capital. For firms to increase their output, they have to employ more factors of production. However, the additional units of the factors to be employed will depend on their prices. Thus, firms will increase output depending on the prices of factor inputs. (See appendix 3 for the mathematical derivation of the model).

For a particular entrepreneur in the informal shoe manufacturing sub-sector, investment will be a function of prices of investment goods (P_i); previous level of output (Y_{t-1}) as a proxy for desired level of output (Y); entrepreneurs' characteristics which include age of the entrepreneur (A_e), level of education (E_l), level of training (T_r), dependency level (D_l); and business characteristics which include proximity of the enterprise to an accessible road (P_e), Savings (S_a), Interest rate (R_e), Transfer payments (T_f), Competition in the market (C_m) and loan acquired (L_a).

3.3.0 Analytical Model.

From the introduction, literature review and the theoretical model, the potential entrepreneur's decision making on investment at time t will be determined by the price of investment goods (P_i), output in the previous period (Y_t-1), savings (S_a), loan acquired (L_a), competition in the market (C_m), level of education (E_l), number of dependants (D_l), transfers (T_f), age of the entrepreneur (A_e), level of training (T_r), interest rate in the market (R_e), and proximity or accessibility of the enterprise (P_e). This can be expressed mathematically as

$$I_t = f(P_i, Y_{t-1}, S_a, L_a, C_m, E_l, D_l, T_f, A_e, T_r, R_e, P_e) \quad \text{.....(1)}$$

where I_t is investment at time t while f is a functional relationship and others are as explained above. Two specifications of equation (1) were specified and estimated using econometric methods and the F-statistics, coefficient of determination R^2 and the t-ratios reported. The specific models that were estimated were the linear and the log-linear models.

The linear model was specified as

$$Inv_t = \beta0_0 + \beta1_1 p_i + \beta2_2 Y_{t-1} + \beta3_3 S_a + \beta4_4 L_a + \beta5_5 C_m + \beta6_6 E_l + \beta7_7 D_l + \beta8_8 T_r + \beta9_9 A_e + \beta10_{10} T_r$$

$$+ \beta_{11} R_e + \beta_{12} P_e + e \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

β_i's $_i$=0,1 .....12 are the parameters to be estimated, and e is the error term.

The log-linear model was specified as

$$InInv_t = In\beta_0 + \beta_1 InP_i + \beta_2 InY_{t-1} + \beta_3 InS_a + \beta_4 L_a + \beta_5 InC_m + \beta_6 InE_l + \beta_7 InD_l + \beta_8 InT_r + \beta_9 InA_e +$$

$$\beta_{10} InT_r + \beta_{11} InR_e + \beta_{12} InP_e + e \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

3.5.0 Definition and Measurement of Variables

Data was collected on a total of 13 variables. The variables on which data was collected are:

Investment expenditure (I_t) this is the dependent variable in the analysis. It was obtained by multiplying the units of each investment good with its P_1 and then summing up for all investment goods used during the year.

Output (Y_t) this is the value of final goods produced by the firm over 1998. The goods produced were valued at 1998 prices and the values summed up.

Price of investment goods (P_i) this is the price index of investment goods. It includes all items or producer goods bought by the entrepreneur in the previous year (X_i). This was obtained by getting prices of all items (P_i), weighting each with the amounts bought of each item and taking their weighted sums and dividing by the total number of items ($\Sigma P_i X_i / X_i$).

Credit (L_a) this is a dummy variable. It took a value of one if entrepreneurs borrowed money for investment in the previous year and a value of zero if otherwise.

Savings (S_a) this refers to retained earnings during the previous year.

Age of the entrepreneur (A_e) this is the age of the entrepreneur in years measured from time of birth to the end of the year (1998).

Level of education (E_t) this is the education level attained by the entrepreneur and was measured by the years of formal schooling.

Transfers (T_f) this is money from relatives and friends invested in the business during 1998.

Level of training (T_r) this is the skill attained by the entrepreneur after formal schooling. It was measured by the number of months in training.

Interest rate (R_c) This is the opportunity cost of capital, or interest paid on the capital

borrowed from the source of capital measured in percentage (the weighted average interest rate was used).

Competition in the market (C_m) this refers to the number of entrepreneurs producing shoes within that area and was measured by the distance in metres from one enterprise to the other.

Dependency level (D_l) this refers to the number of persons who depend on the entrepreneur for their livelihood.

Accessibility of the enterprise (P_e) accessibility of the enterprise was measured by the time taken to move from the enterprise to the bus terminus in minutes.

3.6.0 Overview of the Area of Study

Kibera is one of Nairobi's largest slums, with population estimates ranging from 500,000 to 750,000 people[10]. Kibera is located about seven kilometers southwest of Nairobi bordered on the north, east and west sides by Kenyatta Hospital and housing estates and on the south by the Nairobi Dam. There are two access points to Kibera. One access is along Kibera drive, which runs through the higher income areas. The other is at the market at Line saba. This second access is serviced from town by buses, matatus and passenger train. Kibera area has insufficient roads and footpaths, water, electricity and sewerage facilities. The Kibera terrain slopes downhill towards Nairobi Dam. In the rainy season, water and sewage course down the existing paths making the area increasingly impenetratable and prone to flooding.

Kibera is densely settled in the slum areas, and the density of slum areas appears to be increasing with mass influx of new entrants. According to Joan (1993), 25 percent of slum area

[10]. This ranking was carried out in a pilot survey of Line Saba, conducted by teams from Nairobi and Kenyatta Universities in 1988, Unpublished results.

households report no regular source of income. Their income is spent on a priority basis with food, fuel, housing and water receiving the bulk of income with the residual being used for clothing and education. This calls for investment in the informal sector activities given the sector's characteristics.

3.7.0 Data and Sample Statistics.

To attain the objective of the study, primary data was collected on all variables of analysis. A structured questionnaire was constructed and administered to the various respondents by the researcher. The population of interest was all the informal shoe-makers in Kibera area of Nairobi province. Three estates were selected randomly from the 14 estates of Kibera. The estates selected were Makina, Lindi and Line Saba. A list (sampling frame) of all shoe-makers in the three estates was made and a random sample of 40 shoe-makers selected using a random number table. The collected data was coded, formatted and analyzed using a statistical package called STATA. The questionnaire that was used is given in the appendix as Appendix1.

CHAPTER IV

4.0.0 DATA ANALYSIS AND INTERPRETATION.

In the chapter we present data analysis which is sub-divided into two parts namely descriptive statistics and inferential statistics. Descriptive statistics show frequencies, percentages, mean and standard deviation of the variables while inferential statistics are based on the two econometric models specified in chapter three.

4.1.0 Descriptive Statistics

This section presents the distribution of key variables of the study.

4.1.1 Investment Expenditure

Table 1 below shows the distribution of investment expenditure among the entrepreneurs in terms of mean, standard deviation, percentage, maximum and minimum values.

Table 1.1 investment expenditure in 1998

Investment Expenditure in Kshs.	No. of Entrepre-neurs	Percentage
1 – 1000	3	7.5
1001 – 2000	14	35
2001 – 3000	5	12.5
3001 – 4000	6	15
4001 – 5000	2	5
5001 – 6000	5	12.5
Above 6000	5	12.5
TOTAL	40	100

Source: Survey Data (December 1998)

The mean investment expenditure undertaken by the entrepreneurs was Kshs 3,125 with standard deviation of 1932. In the table, majority (62.5 percent) of the firms invested between Ksh 1001 and 4000. About 30 percent of the entrepreneurs had invested over Ksh 4,000 in 1998. The study established that most entrepreneurs resorted to hiring most of the tools and equipment (e.g. sawing machine, shoe last etc) since these items were perceived to be very expensive.

4.1.2 Savings

The survey results show that majority of entrepreneurs had saved over Ksh. 4000. The mean level of savings was Ksh. 4000 with standard deviation of Ksh. 3,224. The minimum and maximum level of savings was Kshs.0 and Kshs. 14,000 respectively.

Table 1.2: Distribution of Savings

Amount of Business Savings in 1998 (Kshs)	No. of Entrepreneurs	Percentage
None	5	40
1 - 2000	16	0
2001 - 4000	0	10
4001 - 6000	4	22.5
6001 - 8000	9	7.5
8001 - 10,000	3	7.5
Above 10,000	3	12.5
TOTAL	40	100

Source: Survey Data (December 1998).

As shown in the table, 40 percent of the shoemakers reported no savings at all. Through probing it was revealed that they did not even operate bank accounts either in financial or Non

Bank financial institutions. Also, the table shows that 12.5 percent of the entrepreneurs had saved over Ksh. 10000 while 15 percent had saved between Ksh.6000 and Ksh.10000.

4.1.3 Education profile of entrepreneurs.

The entrepreneurs were asked to state how many years they spent in formal schooling. Their responses were summarized in the table below.

Table 1.3: Entrepreneurs' education level in years.

Years of Education	No. of Entrepreneurs	Percentage
1 - 5	6	15
6 – 10	22	55
Above 10	12	30
TOTAL	40	100

Source: Survey Data (December 1998)

The table shows that more than a half of the entrepreneurs (55 percent) had acquired basic education. About a third of the entrepreneurs (30 percent) had spent more than 10 years acquiring education and slightly more than two-thirds (80 percent) had spent 5 years schooling. The mean years of schooling were 8.3 years with a standard deviation of 3.3. These results show that even the relatively educated are engaged in the informal sector activities which contradicts the belief that most of those engaged in the informal sector activities have low levels of education.

4.1.4 Age of the entrepreneurs

The study findings show that 72.5 percent of the entrepreneurs were within the age bracket 21-35 years while 75 percent were in the bracket of 21-40 years.

Table 1.4: Age distribution of the entrepreneurs in years

Age	No. of Entrepreneurs	Percentage
15 – 20	8	20
21 – 25	7	17.5
26 – 30	14	35
31 – 35	8	20
36 – 40	1	2.5
Above 40	2	5
TOTAL	40	100

Source: Survey Data (December 1998).

The table shows that 35 percent of the respondents were in the age bracket 26-30 years while only 5 percent were aged above 40 years. The mean age of the respondents was approximately 27 years with a standard deviation of 6.5. In other words, the majority of the respondents were in their middle ages i.e. between 21-35 years.

4.1.5 Weekly Output

The mean number of pairs of shoes produced by the entrepreneurs was 20 pairs per week with a standard deviation of 12.05 while the maximum and minimum number of pairs of shoes produced per week by the entrepreneurs were ninety-six (96) pairs and five (5) pairs respectively.

Table 1.5: Weekly output

No. of Pairs	No. of Entrepreneurs	Percentage
1 – 10	4	10
11 – 20	10	25
21 – 30	15	37.5
31 – 40	4	10
Above 40	7	17.5
TOTAL	40	100

Source: Survey Data (December 1998)

About 37.5 percent of the respondents on average produced between 21 and 30 pairs, while 10 percent produced between 1 and 10 pairs. 27.5 percent of the entrepreneurs produced over 31 pairs per week with majority (65 percent) of the respondents producing over 20 pairs per week.

4.1.6 Business Size

The table (1.6) below provides information on the business categories of employees on the enumerated enterprises.

Table 1.6 Distribution of businesses by category of employees.

Category of Employee	No. of Employee	Percentage
Owner(s)	20	50
Causal	6	15
Permanent	3	7.5
Unpaid	11	27.5
TOTAL	40	100

Source: Survey Data (December 1998)

The table shows that the majorities (50 percent) of owners are self-employed in their own business.

4.1.7 Training level attained by entrepreneurs in years

In the table, a half (50 percent) of the respondents trained for a duration of 1-2 years, 27.5 percent had trained for more than 2 years while about 7.5 percent had trained for less than one year.

Table 1.7 Level of Training.

Years of Training	No. of Entrepreneurs	Percentage
None	6	15
Less than 1	3	7.5
1-2	20	50
Above 2	11	27.5
TOTAL	40	100

Source: Survey Data (December 1998)

The mean duration of training was 1.8 years with a standard deviation of 0.89. The survey data revealed that none of the respondent had done any trade test. A possible explanation could be that most of the entrepreneurs in this sub-sector are only interested in acquiring the skills and not being in possession of certificates or that they are not interested in formal sector employment.

4.1.8 Methods (sources) of skills acquisition

The entrepreneurs were asked how they acquired the skills of making shoes. Their responses were summarized in the table below.

Table 1.8: Skills Acquisition.

How skills were acquired	No. of Entrepreneurs	Percentage
Self-taught	6	15
Apprenticeship	21	52.5
Village Polytechnics	5	12.5
Technical Institutes	7	17.5
*Others	1	2.5
TOTAL	40	100

Source: Survey Data (December 1998)
*Others include welfare organizations, prisons, Children's home etc

The table shows that more than half (52.5 percent) of the shoemakers acquired their skills through apprenticeship. 17.5 percent acquired their skills from technical institutes, 15 percent were self-taught while about 12.5 percent acquired their skills through village polytechnic. Only 2.5 percent acquired their skills through abroad category of others, which included welfare organizations, prisons, etc. None of the respondents acquired their skills from shoe companies or other large enterprises. This possibility cannot be ruled out entirely because the other shoemakers who might have trained the respondents might have been trained by hoe companies or acquired the skills from shoe companies. However, we can propose that currently, existing shoemakers provide the main training ground.

4.1.9 Dependency level

In the table, majority (62.5 percent) of the entrepreneurs had 2 dependants on average, 20 percent had no dependants while 2.5 percent had more than 6 dependants. The mean number of dependants was 2.2 persons with standard deviation of 1.74. This mean is relatively low implying that majority of the respondents are young people with minimal responsibilities.

Table 1.9: Number of dependants.

No. of Dep-endants	No. of Entre-preneurs	Percent-age
None	8	20
1-3	25	62.5
4-6	6	15
Above 6	1	2.5
TOTAL	40	100

Source: Survey Data (December 1998)

4.1.10 Non-Financial Services

In an attempt to learn about the reach of non-financial assistance to the entrepreneur, the entrepreneurs were asked about different types of non-financial services they had received while in business. Their responses were summarized in the table below.

Table 1.10: Non-financial services received.

Service	No. of Entre-preneurs	Percentage
None	13	32.5
Marketing and Exhibition	12	30
Technology	8	20
Training in Management and Consultancy	7	17.5
TOTAL	40	100

Source: Survey Data (December 1998)

The study reveals that about 32.5 percent had never received assistance from any source while in business. On the other hand, about 22.5 percent of the entrepreneurs had received marketing services, 7.5 percent had received exhibition services while 20 percent had received assistance related to technology with only 17.5 percent reporting having received management and business guidance and counseling (consultancy) services.

In relation to the type of non-financial services received by the entrepreneur, the respondents were asked to specify who provided them with the services. About a third (35 percent) of the respondents had received the services from fellow shoemakers while 15 percent had received services from *jua kali* Associations. The remaining percentage received from the government, companies and non-governmental organizations (NGOs). The respondents were further asked if they felt they needed additional skills in order to be effective in business. About 70 percent of the respondents stated that they would like to acquire additional skills of some type. Over one-third (33 percent) expressed a need for technical skills, 20 percent needed marketing services, 17 percent stated management skills while 30 percent stated none.

4.1.11 Transfer Payments

The entrepreneurs were asked to state whether they had received any money from friends or relatives for investment into their business in the course of the year. The responses were as below.

Table 1.11: Transfer payment in Kshs.

Amount Received	No. of Entrepreneurs	Percentage
None	17	42.5
Less than 1000	2	5
1001 –1500	6	15
1501 –2000	5	12.5
2001 –2500	2	5
2501 –3000	5	12.5
Above 3000	3	7.5
TOTAL	40	100

Source: Survey Data (December 1998)

The table shows that about 42.5 percent of the entrepreneurs had not received any transfer payment for business purposes, while about 37.5 percent had received more than Ksh. 1500 with 5 percent reporting having received between Ksh.1001- 1500. The mean amount of transfer payment was Ksh. 1143.75 with standard deviation of 1152.29.

4.1.12 Problems and constraints faced by entrepreneurs

The respondents were asked to state major constraints they experienced in the course of their operations. The study results shows that 35 percent of the respondents were faced with financial problem in terms of working capital (especially for those who had just entered into business) and operating capital for those who have been in operation and even new entrants.

Table 1.12: Constraints faced by the entrepreneurs.

Constraint	No. of Entrepreneurs	Percentage
Finance	14	35
Market	10	25
Tools and Equipment	4	10
Raw materials and intermediate product	6	15
Transport	4	10
*Others	2	5
TOTAL	40	100

Source: Survey Data (December 1998)

*Others include government fees and regulations; harassment by police; unsuitable premise; lack of utilities etc.

About 25 percent of the respondent were faced with the market problem which according to them was due to low demand which they attributed to high influx of *mitumba* shoes in the market, and high competition from other shoe-makers including the shoe brokers who operate within the area. On the other hand, 5 percent of the respondents specified abroad

category of problem, which was specified as others. This included government fees and regulations, harassment by the police, unsuitable premise, and utilities, among others.

4.1.13 Entrepreneurs Experience

The table below summarises the entrepreneurs level of experience in years. According to the table, all the entrepreneurs had at least acquired some level of experience.

Table 1.13: Entrepreneurs level of experience in years.

Experience in Years	No. of Entrepre-neurs	Percentage
0-3	5	12.5
4-6	11	27.5
7-9	8	20
Above 9	16	40
TOTAL	40	100

Source: Survey Data (December 1998)

About 12.5 percent of the entrepreneurs had working experience of about 3 years while about 65 percent had experience of more than 6 years. The mean year of experience for the respondents was 7 years with standard deviation of 3.23. This mean is higher than the age of the business. A possible explanation for this phenomenon could be that some of the entrepreneurs might have worked somewhere else as employees before starting their own businesses.

4.1.14 Density of shoe-making enterprises

Although there were many enterprises in the informal shoe sector in the area, only a few specialized in making new shoes. Out of these, the study found that for about 30 percent of the

entrepreneurs the distance between them was 100 metres while for about 25 percent of the respondent it was 50 metres. The mean distance amongst these entrepreneurs was 78.75 metres with a standard deviation of 50.05.

4.1.15 Age distribution of the Business.

The age of the entrepreneur is the time in years that the business has been in operation. To capture this, the entrepreneurs (shoemakers) were asked to state when they started the business. The mean age of the business was 5.7 years with a standard deviation of 3.2. In view of the study findings on the enterprise mortality, majority of enterprise dies on or about their fifth birthday. This conclusion is based on the fact that relatively few establishments had been in operation for more than 5 years.

4.1.16 Credit

Entrepreneurs were asked whether they had received credit (Loan) for business use. All respondents had not received any credit. According to the respondents, this was partly due to stringent rules put by the lending institutions. About 4 percent of the respondents had approached financial institutions and Non-Governmental Organizations, which provide credit but none, had been provided with loan or even being promised. This was in consonance with Gichira (1991), who asserted that apart from the entrepreneurs failing to provide collateral, they also did not know how to prepare a bankable proposals.

4.1.17 Seasonality of sales

The entrepreneurs were asked to state the months when they experience high sales and low sales. The study found that the shoe market was quite sensitive to seasonal variations. The results suggest that the busiest periods are in April (due to the rainy season), November and December due to holiday purchases. Most producers (shoemakers) were in agreement that January, May, July and September are months when demand is lowest. Asked through probing how they deal with these periods of low demand, they responded that in most cases they tend to produce for display during such periods when customers are likely to *window shop* while deciding what they will buy later. During these periods, most shoemakers meet their daily cash needs through shoe repairs. Some resort to new activities such as vending shoe-polishing materials, shoe brokerage, among other activities. One entrepreneur was quick to point out that he collects all the abandoned shoes that accumulate in his premise, repairs them and sells them as second hand shoes.

4.2.0 Regression Results

This sub section presents the regression results of specifications (2) and (3) specified in chapter three (3). The regression results for the linear and log-linear models are presented in tables 4.2(a) and 4.2(b) below.

Table 4.2(a) Regression results: Linear model[11]

Dependent variable = $Invt_t$

Independent variable	Coefficient	t-ratio
P_I	0.79	1.51
Y_t	1.52	3.39
S_a	-0.10	1.41
C_m	3.29	0.54
E_I	445.22	3.00
D_I	339.62	1.39
T_f	0.13	0.44
T_r	7.17	0.21
P_e	-95.88	-2.54
A_e	-77.00	-0.97
Constant	-420.26	-0.16

$F(10,29) = 4.01$

Prob>F = 0.0016; R^2 = 0.5804; Adjusted R^2 = 0.5357; Root MSE = 2148.4

[11] In the analysis, credit and interest rates were dropped because non-of the respondent had

Table 4.2(b) Regression Results: Log-linear Model

Dependent variable = Inv_t

Independent Variable	Coefficient	t-ratio
Log P_t	0.437	3.695
Log Y_t	0.489	3.827
S_a	-0.003	1.699
Log C_m	0.032	0.321
Log E_t	0.792	2.744
D_t	-0.099	2.660
T_f	-0.022	0.352
T_r	-0.043	-0.478
Log P_e	-0.180	-1.018
Log A_c	-0.373	-0.659
Constant	1.591	0.769

F (10,29) = 5.17

Prob> F = 0.0002; R^2 = 0.65408; Adjusted R^2 = 0.6170; Root MSE = 0.5278

From tables 4.2(a) and 4.2(b), the log-linear model appeared to have a stronger explanatory power in terms of the F-ratio and the coefficient of determination (R^2) as compared to the linear estimated model. In the log-linear model, 62 percent of variations in investment expenditure were explained by variations in the independent variables. This compares with 54 percent from the linear model. In terms of the t-ratios, the log-linear still provided better results

---

borrowed money for business purposes.

with four independent variables turning out significant[12] compared to three in the linear model. In as far as the F-ratios were concerned, the log-linear specification was superior to the linear specification. Furthermore, the log-linear specification presented results readily in terms of elasticities for easy interpretation. The specification was therefore adopted as the suitable one for the analysis. There was a problem of multicollinearity[13], which was however not serious (see correlation matrix in appendix 2).

4.2.1 Interpretation of the regression results

The interpretations presented here are based on the regression results presented in table 4.2(b) for the log-linear model. From the results, output emerged the most significant variable influencing investment expenditure as shown by a t-ratio of 3.827. The coefficient of this variable was less than unity suggesting that a proportionate increase in output is associated with a less than proportionate increase in investment expenditure. Specifically, one- percent increase in output yields a 0.489 percent increase in investment expenditure. This could be attributed to the fact that output affects investment by determining the desired level of capital stock and income which consequently increases savings through which investment is increased.

The price of investment goods (P_i) was a significant determinant of investment with a t-ratio of 3.695. The variable had a positive coefficient, which was however inelastic suggesting that one- percent increase in the price of investment goods will lead to 0.437 percent increase in investment expenditure.

---

[12] A variable is statistically significant at 95% level of confidence if it has a t-ratio of approximately 2 and above in absolute terms.

[13] Multicollinearity is serious when t-ratios are very low (insignificant) and exaggerated R^2.

expected. This suggests that entrepreneurs who had received such payments had not made higher investment expenditure than those who did not receive at all. The variable was statistically insignificant with a t-ratio of 0.352. This could be attributed to the fact that entrepreneurs who received transfer payments spent the money on other needs other than those related to business, for example paying school fees, medical expenses, among others.

The training level acquired by the entrepreneur was statistically insignificant with a negative coefficient (-0.43). The result suggests that one- percent increase in training level acquired by the entrepreneur will lead to 0.043 percent decrease in investment. The insignificance could be attributed to the fact that people with higher levels of training may seek employment in the formal shoe companies such as Bata shoe company, Tiger shoe company, among others and not in this sub-sector.

Age of the entrepreneur was statistically insignificant with a t-ratio of 0.659. The coefficient of this variable was negative (-0.373) suggesting that an increase in the age of the entrepreneur by one percent will cause investment to fall by 0.373 percent. This implies that, the older one grows, the less the level of investment expenditure one undertakes. A possible explanation to this is that, as people grow old, they are obliged to meet other responsibilities of ageing for example, paying school fees and other basic needs. As a result less is made available for investment. Alternatively, due to the characteristic of competitiveness (free entry and exit) and low initial capital requirements in the sector, the young find it easy to invest in this sector.

The coefficient of accessibility of the enterprise was negative (-0.180) and statistically insignificant (a t-ratio of -1.018). A possible explanation could be that these entrepreneurs do not consider accessibility of their enterprises when making investment decisions in the sub-

sector.

Competition amongst the entrepreneurs had a positive elasticity of 0.033 suggesting that a proportionate increase in competition would lead to a less than proportionate increase in investment expenditure. Specifically, a one- percent increase in competition would lead to 0.033 percent increase in investment expenditure. This result reveals the fact that informal shoe sub-sector operates in a market where there is free entry and exit, hence each entrepreneur outdoes the other by improving quality and reducing their costs. In addition, the entrepreneurs compete by changing the product design hence increasing investment.

CHAPTER V

SUMMARY AND POLICY RECOMMENDATION

5.1.0 Summary and Conclusions.

The log-linear regression result reveals that, output is the most significant determinant of investment expenditure in the informal shoe sub-sector. Other varables that were significant determinants of investment expenditure were price of investment goods, entrepreneurs' level of education acquired and number of dependants. The remaining variables in the model specification were statistically insignificant.

Output, price of investment goods, competition in the market and education level had positive effect on investment expenditure while the rest of the variables in the analysis had negative effect on investment expenditure. These variables include transfer payments, number of dependants, entrepreneur's level of training, age of the entrepreneur and accessibility of the enterprise.

The vast majorities of entrepreneurs in the informal shoe sub-sector are and will remain copiers. This was reflected in the design of shoes produced. All the respondents seemed to be familiar with similar designs and had no way of gauging the appropriateness of different designs. This is because all the respondents were producing similar shoe designs (moccasins and big shoe). Also, most entrepreneurs did not have the skills and management experience to prepare business plans and cash flow statement. This came in the limelight when the entrepreneurs were asked about savings, output, quantities of input, input prices and investment.

Although estimates show that by the end of 1994 that there were 105 formal and

informal institutions with SMEs' support packages in the country aimed at enhancing the sector's contribution to the economy, the study found that only a few entrepreneurs had received these services (see table 1.10 on descriptive statistics). This suggests the possibility that the assistance may not be reaching this sub-sector or that the stakeholders in the informal sector are targeting specific sub-sectors within the informal sector or that the respondents are not aware of assistance package available to them.

Raw materials especially leather, soles and insoles were found too expensive. In addition, some of the essential raw materials are imported by only a few individuals who sell them at exorbitant prices. This is one of the major constraints to the expansion of the sub-sector as reflected in the descriptive statistics (see table 1.12). Further, the tools and equipment used by the shoemakers were found to be also expensive and at times difficult to come across (unavailable). For instance other than one respondent, the rest were either hiring the sawing machine or hiring the stitching services. The respondents asserted that they Preffered imported tools and equipment relative to the ones made by jua kali artisans because tools and equipment made by jua-kali artisans are of poor quality and hence not durable.

5.2.0 Policy Recommendations.

In the light of the research findings, the following recommendations are suggested.

- It is desirable that short and elementary management book-keeping courses be taught to the respondents so that they can acquire some basic idea on how to prepare books of account, cash flow and how to keep business records in general. This would enable them make superior investment decisions.

- There is need for the entrepreneurs to expand their output. It is desirable for the stakeholders in the informal sector to increase the demand for these products by marketing the products on behalf of the entrepreneurs at macro level since it will be very costly for individual firms to do so. Secondly, the stakeholders targeting the sector should encourage formation of cooperative societies and ROSCA's, that would assist entrepreneurs to sell their products in foreign markets. Through these societies, the entrepreneurs can also be able to secure loans from both the formal and informal financial institutions. This is because most lending institutions e.g. Juhudi[14] prefer lending to groups and not to individuals (Oketch, 1991). It must however be borne in mind that promotion of cooperatives is not a guarantee for improved performance. Experience from other developing countries e.g. Pakistan Weaver's Cooperatives and the Philippine Industrial Cooperative, shows that cooperatives have failed due to lack of working capital, raw material, poor marketing, organizational and management problems (see Gichira, 1991). Thus, the recommendation of cooperative societies would require careful study before actual implementation. Further, to expand output the stakeholders should be able to provide SMEs with storage facilities.
- Making capital goods available and affordable to the entrepreneurs can stimulate investment in this sector. The government can use both fiscal and monetary policies to aid the entrepreneurs by either subsidizing the prices of the capital goods used in this sub-sector or reducing taxes on capital goods required in this sub-sector could achieve this. This will stimulate investment in the sub-sector.
- On financial and non-financial assistance, it is recommended that awareness programs

[14]. The Juhudi credit scheme is a credit scheme operated by K-REP which operates on the principles of minimalist credit i.e. small loans are disbursed to individual entrepreneurs using a group based methods of lending in which all members are jointly responsible for each other

through workshops, seminars, chief's *barasas,* among others be organized for the informal sector entrepreneurs. In addition, extension and field officers should also be able to reach these entrepreneurs at their work places in order to disseminate information about the assistance package available for the entrepreneurs by various stakeholders.

- The stakeholders in the informal sector should target entrepreneurs in this sub-sector and assist them acquire entrepreneurial skills through formal and informal training. This can be achieved by the use of BOSS[15] services or business service centres. The stakeholders should therefore promote BOSS facilities in the country so that more entrepreneurs in the sector can be reached. This will make the entrepreneurs in the sub-sector good managers of their respective businesses.
- As was revealed in the regression analysis that dependency erodes the capital base of the entrepreneurs, there is need to reduce the number of dependants. This can be achieved by sensitising the populace about the advantages of smaller families. Hence family planning awareness programmes to the public are necessary.
- The government should be able to guarantee the small-scale entrepreneurs' collateral to enable them secure loans from the relevant stakeholders. It is further recommended that credit to entrepreneurs should be given in kind e.g. machines, tools and equipment among others. This would ensure that the funds are not diverted to meet other needs like school fees, medical expenses, among other basic needs.
- Most of the producers in the sub-sector were found to be operating on verandas, outside kiosks or had erected temporary structures. Further, these entrepreneurs operate as squatters

[15] Boss (the Business One-Stop Shops) refers to business advisory and technical assistance services among small and micro enterprises through a facility that could provide most of such services under one roof.

on government land or other empty land and do not hold tittle deeds. This means they cannot neither expand their businesses nor put up permanent structures (building) from which to operate. It is recommended that land should be set aside and structures put up and allocated to these entrepreneurs so that they can have a central place where they can easily be reached (accessed) by customers and those who are interested in providing them with various assistance packages.

BIBLIOGRAPHY

Abuodha, E.C.(1989) "Determinant of investment for Nairobi Manufacturing informal sector" Unpublished M.A Thesis, University of Nairobi.

Aleke D.C (1991), "Survey and Analysis of Credit Programs for Small and Micro Enterprises in Kenya", Vol. I, K-REP, Nairobi.

_____, (1992), "Improving the Growth potential of the Small scale and Informal Sectors", Report to the World Bank, K-REP.

Branson H.W.(1989) *Macroeconomic Theory and Policy*. Harper and Row, New York.

Gichira,R. (1991), "An Analysis of the Law and Regulations affecting the development of the informal sector in Kenya, K-REP, Nairobi.

Gitobu, H. (1989):"Women's small-scale enterprises in rural Kenya" *An influence of spatial isolation on economic linkages*. Kenyatta University, Nairobi.

Harris .J. (1969): "Entrepreneurship and economic development", Occasional paper, Institute of Development Studies, Nairobi.

ILO (1972), *Employment, Incomes, and Equity: A strategy for increasing Productive Employment in Kenya*, Geneva.

ILO/SIDA (1980): "Skill development for self-reliance"; Evaluation report, Nairobi.

Harper,M (1984) *Small Business in Third World* John Willey and sons, New York

Joan, P. (1993) "Micro and Small scale Enterprises in Kenya", Results of the 1993 National Baseline Survey, K-REP, Nairobi.

_____(1993) Shoe Sub-sector Report: Research paper No.13. K-REP, Nairobi.

Kiriti, T.W. (1986)"Determinants of Earnings in the Urban informal sector: A Case study of

mechanics", Unpublished M.A Thesis U.O.N.

Kutsoyiannis, A. (1984), *Theory of Econometrics*, 2nd Edition, Macmillan, London.

Lee.M. (1986)"Constraints on expansion of informal manufacturing sector-some thoughts" Town Planning Section, Nairobi City Council, Nairobi.

Levy, M. F. (1986) *Each in Her own way*: London Lynne, Rienner Publishers.

Leys, C. (1975),"Reflection on the ILO Report on Employment", *Incomes and Equity in Kenya, Interpreting African Underdevelopment" African Affairs*, Vol.72, No.289, pp.419-2129.

Liedholm, Carl and Donald Mead, (1992) "The structure and growth of micro-enterprises in Southern and Eastern Africa" *Evidence from recent surveys*" Michigan State University, Michigan.

Lucas, R.J. (1967)," Adjustment Costs and the Theory of Supply" *Journal of Political Economy*, (August) pp.321-324.

Marris, P. (1968): The social barriers to African Entrepreneurs, Institute of Development Studies, Nairobi.

McCormick D.(1988) "Golden opportunity or Dead Ends" *Small Enterprises in Nairobi* Ph.D. Thesis, Baltimore, Maryland.

McPherson, M.A.(1991) "Micro and Small scale Enterprises in Zimbabwe: Results of a Country- wide Survey", Bethesda, MD.Development alternatives.

Moir,H.(1984): Occupational Mobility and the informal sector in Jakarta, Geneva.

Mukala, G.K (1996) "Determinants of Investment in the Informal Carpentry Sub-sector" A case study of Kitui Town, Unpublished M.A Thesis, Kenyatta University, Nairobi.

Mukras.M.S. (1993): *Elementary Econometrics Theory, application and policy.* English press Ltd., Nairobi.

Ng'ethe, N and A.Ndua, (1984), Education, Training, and welfare in the informal sector: A case study of carpentry and metal work in Eastlands of Nairobi, IDS, Nairobi.

Ng'ethe, N. A.Ndua, J.Wahome, (1987), "The rural informal sector in Kenya, Report of Survey of Nyeri, Meru, Uasin Gishu and Siaya Districts" IDS, U.O.N. Consultancy report No.15

Odera, J.A. (1989),"demand for products from Small Enterprises: A Case study of Footwear" Unpublished M.A. Thesis, U.O.N.

Okello, J.A. (1973) *Rural Enterprise in Kakamega District; Kenya*: A report of the consultancy to Danida, Nairobi.

Oloo, O.K. (1994) The Business One-Stop Shop (BOSS), Consultancy report K-REP, Nairobi.

_____,(1997) Past Experiences in Non-Financial Service in Kenya; The case of Business Service Centers, Consultancy report, K-REP,Nairobi.

Oketch O.H (1991) Micro Enterprise Credit, Employment, Incomes and Output: Some Evidence from Kenya, K-REP, Nairobi.

Oketch H. A. Otieno and D. Kulundu, (1995), "Demand and Supply of Micro and Small Enterprise Finance in Kenya", K-REP, Nairobi.

Oketch,H.O and Parker Joan,(1992) " Kibera furniture sub-sector report" K-REP, Nairobi.

Page,J. and W.Steel,(1984) "Small Enterprises Development" *Economic Issues from African Experience*, World Bank Technical paper No. 26 Washington D.C.

Perlman,M. (1989) *Macroeconomics* 2nd Edition Philip Allan. Publishers Oxford.

Republic of Kenya: Development Plans of; 1989-1993, 1997-2001

_____ Economic Survey 1997

_____ Sessional paper No.I of 1986 on Management for Renewed Economic Growth.

_____ Sessional Paper No.2 of 1992 On Small Scale and Jua-kali Development in Kenya. Government printer, Nairobi.

Sastry,D.(1975) "Investment Behavior in the Indian capital goods Industry", *Indian Economic Journal* (July-Sept.) Vol.33 No.1, pp56-68.

Samuelson, P. (1939),"A Synthesis of the Principle of Accelerator and Multiplier," *Journal of Political Economy*, (Dec.) pp.786-797.

Thomas. H. (1962):"A case study on Uganda development operations for small- scale enterprises". Kampala.

Tobin,J (1969), "*q* General Equilibrium approach to Monetary Theory" *Journal of Money Credit and Banking*, (Feb.) pp.16-29

Varian,H.(1992):*Microeconomic Analysis* Third edition, Norton and co.New York.

US Agency for International Development (1990), *Country Program for Strategic Plan Fly 1990-1995*: Kenya, Washington DC, Agency for International Development.

Waud.N.(1980):*Macroeconomics*.Harper and Row publishers, New York

World Bank (1994):"Supply and Demand for finances of small Enterprises in Ghana".Washington DC.

Yambo,M.(1991), "Training needs Assessment of the Informal sector", K-REP, Nairobi.

APPENDICES

Appendix 1: ENTREPRENEUR'S QUESTIONNAIRE

The main objective of this study is to analyze the factors that determine investment in the urban informal sectors in Kenya. The questionnaire is intended to collect the necessary data that will assist the researcher in suggesting policies how to expand investment in the informal sector. For reliability of data only entrepreneur will be interviewed.

1.0 IDENTIFICATION:

1.1 Name of the respondent (optional)_____

How old are you? ____

1.2 When did you start this business?

2.0 EDUCATION

2.1 Did you attend school? Yes ( ) No ( )

2.2 If yes, what is the highest level of education attained?____

3.0 OUTPUT

Please provide information that will help fill the following table.

Table I: Output

Type of Shoes	NO. of pairs produced per week	Unit price	Total Revenue
TOTAL			

4.0 INVESTMENT AND PRICE OF CAPITAL GOODS

4.1 Which machines do use in production?

4.2 When did you purchase each of the machines? (year)

4.3 What price did you pay for the machines?

Table 2: Investment & price (1998)

Machine/tool types	Quantity	Year of purchase	Price at purchase	Investment Expenditure

5.0 INPUT PRICES

(The answers to these questions will be summarized in table 3)

5.1 What raw materials do you use for the manufacture of the product?

5.2 What quantities of each raw material are used in the manufacture of one unit of each pair?

5.3 What was the unit cost of the raw material?

Table 3: Input prices

Raw material	Quantity	Unit Price	Total cost

6.0 CREDIT AND RATE OF INTEREST

6.1 Have you ever received loan since you started this business? Yes( )

6.2 No 6.2 If yes, from which source did you get and when?

6.3 How much did you receive?

6.4 What was the rate of interest and repayment period?

Table 4: Credit and Interest rate

Source	Amount received	Rate of interest	Repayment Period	Year of receipt

7.0 SAVINGS

7.1 On average how much do you save per month/week? Kshs

7.2 How much did you plough back into this business? Kshs

8.0 TRANSFER PAYMENTS

8.1 Did you receive any money from friends or relatives last year? Yes/No

8.2 If yes how much did you put into this business? Kshs

9.0 TRAINING

9.1 Have you been trained in this job? Yes/No

a) If yes, Where did you train _____When did you train _____How long did it take you in months?____

b) If no, state why _____

9.2 What level of training have you undergone?_____

10.0 BUSINESS SIZE

10.1 How many employees do you have?

(This includes both casual and permanent workers.)

10.2 What is the level of education of your various employees?

10.3 How much do you pay each of them per day/month?

NO. of Employee	Casual/Permanent	Level of Education	Daily/Weekly payment

11.0 ACCESSIBILITY OF THE ENTERPRISE

11.1 Where do you get your raw mater_____

1.2 How do you transport your raw material?_____

11.3 How long does it take you to reach the bus terminus in minutes?___

12.0 DEPENDENCY

12.1 How many people live with you in your house?

12.2 How many of them are self-reliant?

13.0 LICENSE

13.1 Does your business have a license? Yes ( ) No ( )

If yes, how much do you pay Monthly/Annually? KShs_____

13.2 Have you been harassed by any Government officials? Yes/No

If yes, state the reasons

14.0 COMPETITION

14.1 What is the distance from your enterprise to the next similar enterprise in metres?____

15.0 NON-FINANCIAL ASSISTANCE

15.1 Have you at any time received any non-financial assistance? Yes/No

15.2 (a) If yes, state the type acquired, when acquired and who provided.

TYPE	WHEN RECEIVED	WHO PROVIDED

(b) If no, what services would you like to be provided with in order of priority?

_____

_____

15.3 What are major limitations to the expansion of your business? (In order of importance)

_____

_____

16.0 (a) What are your future aspirations?

_____

(b) How do you intend to achieve your aspirations?

THANK YOU.

Appendix 2

Correlation matrix

	I_t	P_i	Y_t	S_a	C_m	E_l	D_i	T_f	T_r	P_e	A_e
I_t	1.000										
P_i	0.395	1.000									
Y_t	0.236	-0.066	1.000								
S_a	0.012	0.085	-0.034	1.000							
C_m	0.356	-0.117	0.256	-0.036	1.000						
E_l	0.358	0.014	-0.162	0.005	-0.080	1.000					
D_i	0.132	-0.110	0.291	0.349	0.179	-0.010	1.000				
T_f	0.037	0.036	0.195	-0.161	0.118	0.190	-0.086	1.000			
T_r	-0.194	0.173	-0.238	-0.153	-0.205	0.098	-0.253	0.023	1.000		
P_e	-0.194	0.006	0.318	0.011	0.339	-0.078	-0.043	0.286	-0.153	1.000	
A_e	0.102	-0.135	0.469	0.064	0.435	-0.187	0.549	-0.122	-0.289	0.154	1.000

Appendix 3.

Derivation of Investment function for the informal sector firm

The firm will maximize the present value of its future stream, subject to:

(i) Technology; which is given by; $Yt = f(N_t, K_t)$; $\Delta y/\Delta N > 0$; $\Delta y/\Delta K > 0$ .....(1)

where: Y_t = output per unit of time; N_t = Worker-hours of input; K_t = Capital stock.

(ii) Depreciation (d);

Assuming capital at the beginning of the next period to be (t+1), then $Kt+1 = Kt + i_t - dKt = (1-d)Kt + i_t$

.....(2)

The firms profits are given by the value of total sales (P_tY_t), less: the wage bill (W_tN_t) and expenditures on investment goods ($P^i_ti_t$);

Where: $\mathbf{P^i}$ is the price of plant and equipment; W_t is the wage rate; $\mathbf{p_t}$ is the price of output. Summing up for the present value we get:

$PV_o = \Sigma^n_0 1(1-r)^{-t}(\mathbf{P}_t y_t - W_t N_t - \mathbf{P^i}_t i_t)$ .....(3)
But $y_t = f(K_t, N_t)$

Forming the langragean expression that combines the objective and the constraints we obtain

$\text{Max } L = \Sigma^n_0 1/(1+r)_t(P_t y(K_t, N_t) - W_t N_t - P^i_t i_t) + \beta_t(i_t + 1(1-d)K_{t-1} - K_t)$ .....(4)
N_t, K_t, i_t, β_t

Partially differentiating the above problem with respect to all N's, K's, i's and β's and setting these differentials to zero we obtain the entire investment program and employment demand.

Substituting these functions and solving for y_k we shall get the marginal product of capital of the form

$$y_k = \frac{dP^i_t + rP^i_{t-1} - (P^i_t - P^i_{t-1})}{P_t} \quad \text{.....(5)}$$

Where: The numerator on the right hand side of the above equation is the user cost of capital which is the equivalent of rental cost; d = depreciation charge per unit of capital used in time t; r = interest charge for holding the capital stock or is the opportunity cost incurred by tying up funds; $P^i_t - P^i_{t-1}$ = is the capital gain on the capital stock from the beginning of each period; P^i_t = cost of investment good in that period. The above equation implies that, the capital stock should be expanded until the marginal product of capital (y_k) equals its real user cost (c_t) i.e.

$y_t(N_t, K_t) = C_t/P_t = c_t$ .....(6)

Solving for K_t we get $K_t = K_t(C,P,N)$ but $N=f(Y_t)$, therefore, $K_t = K_t(C,P,Y)$.....(7)

Where; $\Delta K_t/C < 0$; $\Delta K_t/\Delta p > 0$ and $\Delta K_t/\Delta Y > 0$.

From the accelerator theory, we can rearrange the components of gross investment (i^g_t) to obtain the investment function i.e $i^g_t = K_t - K_{t-1} + dK_{t-1}$ .....(8)

Where: i^g_t = Gross investment at time t; d = Depreciation rate; $K_t - K_{t-1}$ = the net investment; dK_t = Replacement investment (i^r) which is that part of gross investment needed to keep the capital stock at a constant level, and it is equal to the conomic depreciation of the capital stock in any one period While net investment is that part of gross investment that increases the level of capital stock. Net

Substituting these functions and solving for y_k we shall get the marginal product of capital of the form

$$y_k = \frac{dP^i_t + rP^i_{t-1} - (P^i_t - P^i_{t-1})}{P_t} \quad \text{.....(5)}$$

Where: The numerator on the right hand side of the above equation is the user cost of capital which is the equivalent of rental cost; d = depreciation charge per unit of capital used in time t; r = interest charge for holding the capital stock or is the opportunity cost incurred by tying up funds;$P^i_t - P^i_{t-1}$ = is the capital gain on the capital stock from the beginning of each period; P^i_t = cost of investment good in that period. The above equation implies that, the capital stock should be expanded until the marginal product of capital (y_k) equals its real user cost (c_t) i.e.

$y_t(N_t,K_t) = C_t/P_t = c_t$ .....(6)

Solving for K_t we get $K_t = K_t(C,P,N)$ but $N=f(Y_t)$, therefore, $K_t = K_t(C,P,Y)$.....(7)

Where; $\Delta K_t/C < 0$; $\Delta K_t/\Delta p > 0$ and $\Delta K_t/\Delta Y > 0$.

From the accelerator theory, we can rearrange the components of gross investment (i^g_t) to obtain the investment function i.e $i^g_t = K_t - K_{t-1} + dK_{t-1}$ .....(8)

Where: i^g_t = Gross investment at time t; d = Depreciation rate; $K_t - K_{t-1}$ = the net investment; dK_t = Replacement investment (i^r) which is that part of gross investment needed to keep the capital stock at a constant level, and it is equal to the conomic depreciation of the capital stock in any one period While net investment is that part of gross investment that increases the level of capital stock. Net

investment in the absence of lags in the adjustment process of actual capital stock to desired capital stock would be $i^n = \Delta K^t$; where: Δ is change. Total investment (i^g) will be net investment (i^n) plus replacement investment (i^r) which is expressed mathematically as

$i^g = i^n + i^r = \Delta K^t + dK$ .....(9)

Assuming that there is no lagged adjustment of actual to the desired investment, the investment demand function becomes $i^g = \Delta K^t(Y,C,P) + dK$ .....(10)

Appendix 4

Summary of Raw Data

Obser-vation	I_t	P_i	Y_t	S_a	L_a	C_m	E_l	D_i	T_f	T_r	R_e	P_e	A_e
1	2175	575	2080	0	0	150	10	3	4500	36	0	30	30
2	6600	420	1456	9000	0	200	8	3	2000	30	0	20	25
3	2063	155	1092	10400	0	40	8	2	800	36	0	10	26
4	5710	1210	726	5200	0	5	8	2	0	24	0	20	20
5	2910	405	3640	10400	0	200	4	4	0	0	0	7	47
6	16340	480	3068	3000	0	50	12	4	2000	18	0	40	32
7	6457.5	270	3016	6000	0	50	11	3	1500	24	0	40	23
8	4000	250	3016	5460	0	200	8	2	1000	18	0	40	5
9	5240	420	5096	0	0	150	6	4	3000	0	0	10	34
10	5900	300	1456	6000	0	100	13	5	0	24	0	5	33
11	1380	930	260	0	0	80	10	3	3000	6	0	30	23
12	1715	200	312	15600	0	70	12	0	0	0	0	25	25
13	3340	450	3640	0	0	60	6	3	0	36	0	30	35
14	1480	270	1092	0	0	100	12	2	4500	30	0	40	30
15	570	40	2912	0	0	120	6	5	0	0	0	35	45
16	4645	827	2340	10800	0	50	10	1	3000	24	0	30	28

17	1600	240	208	2500	0	10	10	2	0	18	0	30	28
18	410	90	6078	0	0	40	8	1	0	24	0	25	27
19	3200	391	208	0	0	60	8	4	0	30	0	20	27
20	3335	470	1456	10000	0	30	8	3	2000	24	0	30	26
21	6735	265	1820	8400	0	100	12	3	3000	24	0	20	28
22	1320	235	728	0	0	10	12	2	0	24	0	25	26
23	1360	320	728	0	0	200	8	0	1000	18	0	40	22
24	1956	180	1976	0	0	10	6	0	0	30	0	5	20
25	1115	330	1196	6000	0	150	5	3	0	24	0	35	34
26	962	290	780	12000	0	40	6	1	0	36	0	15	20
27	4730	236.5	936	20800	0	100	5	10	0	12	0	20	38
28	1562	110.5	1820	5200	0	50	9	1	1500	12	0	35	20
29	1735	225	1560	0	0	50	6	2	2000	18	0	30	27
30	1456	350	1092	0	0	15	8	2	0	18	0	15	22
31	1098	660	364	0	0	5	8	0	1200	36	0	10	20
32	5300	210	1040	7800	0	50	8	2	0	0	0	25	20
33	6845	310	1820	4800	0	150	12	3	0	24	0	20	32
34	3870	420	1092	2400	0	200	10	3	2500	18	0	20	30
35	2180	2180	728	1200	0	150	5	0	1000	24	0	30	22
36	1830	230	1092	0	0	200	8	0	0	24	0	30	36

37	1990	330	1300	0	0	200	10	3	0	24	0	15	30
38	1975	275	936	3000	0	100	8	0	1800	24	0	20	30
39	5900	4025.5	1560	9600	0	60	10	2	0	30	0	30	28
40	2420	345.5	1300	0	0	40	4	0	1500	24	0	20	31