THE ECONOMICS OF PREPAID HEALTH SERVICES: A Case Study of Meru Central Farmers Co-operative Union

By

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This research is my original work and has not been presented for a degree in another University.

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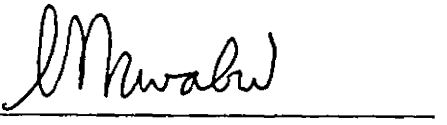
This research paper has been submitted for examination with our approval as University Supervisors.



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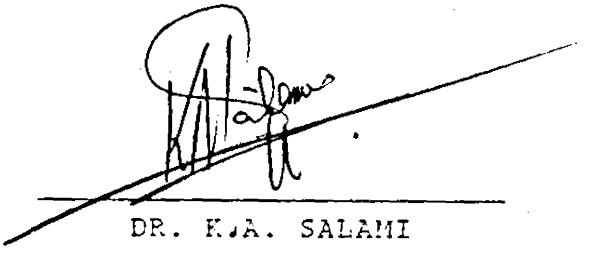

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ABSTRACT

Good health is a prerequisite to economic development of any nation. This is because it increases availability of labour and productivity, saves recurrent resources and accelerates exploitation of natural resources. Though this is true, health services are inaccessible to most people in rural Kenya. The main reason being that the tax revenue is not adequate to finance health services for everyone.

The main aim of this study was to explore the possibility of using agricultural cooperative unions as an alternative health financing strategy. This was done by conducting an empirical study of households' willingness to join a cooperative Health programme (CHP) in a rural area in Kenya.

There are three main findings of this study:

(1) At higher levels of premium that cooperative members would have to pay to join CHP, income remains the sole determinant of whether a cooperative member would enrol in CHP.

(2) As the premium increases, the number of cooperators willing to enrol into CHP decreases.

(3) Although CHP is cost-effective from the cooperative members perspective, it is not economically viable at premiums that the majority of cooperative members can afford to pay.

CHAPTER ONE

1 .0 : PURPOSE OF THE STUDY

1.1: Introduction

Although good health is a human right (WHO,1978), health services are economically and spatially inaccessible to most rural people in Kenya (World Bank, 1980). Even in the absence of user charges, basic health services are not accessible to rural peasants due to time and transport costs. Meier (1984) estimated that 40% of the outpatients getting treatment in rural health centres in Kenya live within 8 Km; 30% live 8 to 16 Km; and 30% live more than 16 Km away. Thus, distance is an important determinant of utilization of health services.

Medical facilities in Kenya are concentrated in a few urban centres, even though about 85% of the Kenyan population is rural. Thus, many rural households do not have easy access to health services. This predisposes them to poor health, which hinders their socio-economic development. The World Bank has noted that poor health reduces the availability of labour, impairs productivity of workers, wastes recurrent resources and impedes development of natural resources.

The Kenya Government cannot provide the population with adequate medical services relying solely on tax revenues. A major health policy of the Fifth Development Plan is to find alternative methods for financing health services. This study examines the feasibility of making health services more widely accessible in rural areas through agricultural Co-operative Unions. Specifically, the possibility of establishing a prepaid Co-operative Members Health programme in a rural setting is examined.

1.2: The Problem

As already noted, in the Fifth Development Plan, the Kenya Government intends to expand coverage and accessibility of health services in rural areas. The major issue in this policy is: Which health financing strategy is likely to make the existing health services more accessible to the rural populations at least cost?

No empirical study has been done to determine the role agricultural co-operatives can play to make rural health services more widely available to rural households. Since some agricultural co-operatives offer health insurance coverage to their employees, it appears that they could also extend it to co-operative members. One way to implement such an extension is to form a prepaid Co-operative Members Health Programme (CHP), with a Co-operative Health Fund, into which members would pay seasonal

premiums. At the end of the year, if any Co-operative member did not obtain medical services through CHP, part of his subscriptions (after deducting administrative and other costs), could be converted into ordinary or preferred shares to motivate Co-operative members to subscribe into the health fund.

Important questions however need to be answered before the government can encourage CHP schemes, for example:

(a) Would Co-operative members be willing to join CHPs?

(b) How would their decisions to join health programmes be affected by their socio-economic characteristics and programme specific attributes?

(c) Would such schemes be economically viable?

(d) Will the CHPs be cost-effective from the perspective of Co-operative members?

(e) What could be the possible social, political and institutional bottlenecks in the implementation of rural based CHPs?

1.3: Objectives of the study

This study is an attempt to provide answers to the above questions. The specific objectives of the study are to:

(a) Identify factors that would be important in households decision to join a CHP.

(b) Estimate effects of the socio-economic characteristics and programme specific attributes identified in (a) above on the households decision to join CHP.

(c) Evaluate the economic viability and cost-effectiveness of CHP in a particular rural area in Kenya.

(d) Explore prospects and problems for initiating a CHP in a specific rural area in Kenya.

1.4: Justification of the study

Knowledge of the determinants of Co-operative member's decision making with regard to health facilities may be important to the policy makers in the Ministry of Health. By knowing the cause-effect relationship between the probability of the CHP being chosen and some key explanatory variables, the health policy-makers can design mechanisms for facilitating the development of CHPs.

Equally important to the health planners is the knowledge of the economic viability of CHPs, especially those based in rural areas. This would enable the policy-makers to make an informed decision of whether or not to encourage the implementation of CHP. For it might not be desirable to implement a project which will not cover its costs. The cost-effectiveness analysis should also be useful to Co-operative Union officials in deciding whether to endorse a CHP.

1.5: Co-operators' Health Programme (CHP)

The term Co-operator refers to any farmer who is a registered member of a Co-operative movement. Unlike the existing Commercial insurance companies (e.g. American Life Insurance Company, British Life Insurance Company, Jubilee Insurance Company, etc.), whose aim is to make profits, the major goal of CHP would be to improve the welfare of its members.

CHP when introduced would be a prepaid health programme which would give services to farmers and their families. At the moment, there is no CHP in Kenya.

Once the CHP is set-up, the farmers willing to enrol into the programme would be required to pay a flat premium per year. After a break-even premium is identified, the payment mechanism can be made flexible to enable members to pay in installments. The installments can be paid twice or four times in a year, depending on the number of times the farmer receives income annually.

CHP should not be imposed upon the farmers. That is, the "normal" Co-operative Movement rule of simple majority should not be applied when setting up CHP. Only the Co-operators who are willing to pay the premiums should be members. Any element of dictatorship may destroy the authenticity of CHP. The Co-operators will need to be well educated on merits and demerits of the CHP in their general meetings, after which the recruitment and enrolment of CHP members may be launched. Union Management, which for a beginning might be charged with the responsibility of initiating and running CHP, would be expected to enter into legal agreements with a number of mission and private hospitals for referral purposes. Of course this would be after each party has tabled its preconditions. Preference should be given to the hospitals proposed by the majority of the members. At least one mission facility which is easily accessible to the Co-operators in any primary society should be considered. This bias towards mission facilities may be justified from many dimensions. (1) Mission hospitals are basically not profit making enterprises.

Thus, their user charges are likely to be lower than those of the private sector. (2) They are relatively more stable, due to their longer history and their ability to secure foreign exchange from their mother countries. Catholic facilities for example, normally get their aid from Italy, vatican and Spain. Methodist facilities are sponsored by British Churches. (3) Mission hospitals have inbuilt referral systems within their chains. For example, if a patient does not get cured in a Catholic mission dispensary, he is referred to a bigger mission hospital for further diagnostic examination and treatment. This happens in all other mission hospital chains. (4) Due to their religious values, mission facilities are less likely to conspire with the patients to swindle CHP. This could occur through over invoicing of the treatment expenses. (5) Mission hospitals could help to curb the patient co-operators utilization rate, so that the patients do not insist on getting inpatient services, unless when necessary.

For the ease of identification by health care providers, members of CHP should be given fool-proof membership cards. They should bear CHP "brand-name", members share number, activity number, names and photographs of household members to be covered under CHP.

Under CHP, a member would have a limited choice of clinics because one would only seek treatment from hospitals with CHP contracts.

CHP should not be autonomous. It should operate within the Co-operative movement framework. This would reduce overhead and variable costs. For instance, according the MCFCU assistant manager, the union is equipped to run such a programme.

Two major characteristics would distinguish CHP from the Commercial insurance companies: Payment of service benefits to health care providers rather than monetary benefits to the person insured, and Co-operative rating, that is, the provision of benefits to all CHP members at the same rate, rather than higher rates to high risk groups.

Two moves intended to control the claims against the CHP funds may be necessary: setting standard rates for common procedures, defining a limited number of services for which payment will be made, and institution of Co-payment, requiring the patient to meet a small share of the cost of treatment. The last measure would be more appropriate for Co-operators who would like to use special inpatient rooms.

Thus, CHP would be a voluntary health insurance scheme which would not employ health care providers or own medical facilities, but would contract with health service providers for medical treatments. Its main feature is that people pay for treatment of an illness before it occurs. It thus helps to reduce the risk of one not being able to pay medical bills at the time of illness.

1.6: Existing Health System (EHS)

The EHS consists of public, private and semi-private or non-governmental health facilities. Government provided health services are at the moment provided free of charge. But non-government services are provided on a fee-for-service basis. These are provided by mission and private providers. Services of traditional healers are also available at a fee.

1.7: Organisation of the Text

This chapter is concluded with a few remarks about the organisation and content of the remaining chapters.

Chapter two describes the area in which the fieldwork for this study was conducted and the evolution of MCFCU through time. The chapter ends with a discussion of the role MCFCU plays at the moment in facilitating cooperators access to health care services.

Chapter Three highlights previous studies done on the economics of prepaid health services. It closes with strengths and weaknesses of the reviewed studies.

Chapter Four explains the methodolgy of this research. The chapter begins with a list of cooperative member specific characteristics on whose data was to be collected. It then dwells on the sampling method and limitations of the sample.

Chapter Five gives an exposition of the theoretical framework within which the data was analysed. The chapter expounds on the linear probability model used in the estimation of parameters. The expected causal relationships and estimation procedures are also clearly stated. The chapter closes with a brief discussion of the models used in the cost-effectiveness and economic viability analysis.

Chapter six presents the results of fieldwork. The results are presented in tabular form. In this chapter hypotheses are matched with empirical evidence.

Chapter Seven evualuates the extent to which research objectives have been realized. Policy recommendations based on research findings are noted. The chapter is concluded with other applications of the study findings.

CHAPTER TWO

2.0: LOCATION AND DEVELOPMENT OF MCFCU

2.1: Introduction

The data on which this study is based were collected in South and North Imenti Divisions of Meru District, Eastern Kenya. Imenti is a high potential agricultural zone.

Its altitude ranges approximately from 1220m to about 2400m above the sea level with exception of Mt. Kenya, which rises over 5,180m. North and South Imenti divisions are generally densely populated. This fact is clear from Table 1 below.

TABLE 2.1: POPULATION DENSITIES IN MERU

Division	Population in 1979	Area in sq.km	Population in 1983*	Density 1979	Density 1987*
N.Imenti	198,434	918	238,765	216	260
S.Imenti	103,543	392	124,588	264	317
Timau	23,289	790	28,142	30	35
Nithi	142,288	640	171,208	222	268
Tigania	140,651	652	169,234	216	268
Tharaka	50,277	1496	60,494	34	40
Igembe	171,587	2572	206,474	67	80

* Projections

Source: Republic of Kenya, Statistical Abstract,1983. Nairobi: Goverment Printers.

Given an area of 9922 Km^2 the population density for the whole district in 1979 was 84 persons per Km^2. The district also has an annual population increase of 3.36% per annum.

Imenti is essentially an agricultural area and most of its inhabitants are farmers growing crops such as coffee, tea, pyrethrum, wheat, tobacco, maize, beans horticultural crops, bananas, and potatoes for subsistence. Surpluses of potatoes and other food crops are also sold for cash. Most of the farmers do keep dairy cattle. The majority of the farmers in Imenti are members of Meru Central Farmers Cooperative Union.

2.2: Development of Meru Central Farmers Cooperative Union (MCFCU)

The first cooperative union was formed in Meru District in 1958. It was called Meru Farmers Co-operative Union Ltd. Its founder and first manager at the time was an Englishman by the name Benson. He left the District at the eve of independence. The main objective of the Union was to receive coffee produce from primary societies, and market it on behalf of farmers. Thus, it acted as an agent of coffee societies in Meru.

Due to dissatisfactions with the then Union management and because of sectional politics, M.F.C.U. broke-up in 1970, and split into three autonomous groups, namely:

(a) Meru Central Farmers Co-operative Union (M.C.F.C.U.)

(b) Meru South Farmers Co-operative Union Ltd. and

(c) Meru North Farmers Cooperative Union Ltd.

M.C.F.C.U. Ltd merged with Meru Central Dairy Union Societies, and diversified its activities into milk marketing.

At present, MCFCU is made up of the following societies:

TABLE 2.2: COMPOSITION OF MCFCU

Coffee Farmeers Cooperative Societies		Dairy Farmers Cooperative Societies	
Nkuene	Kianjuri	Nkuene	Naari
Igoji	Mirigamieru	Abogeta	Mirigamieru
Kiangua	Ruiri	Igariri	Kithoka
Abogeta	Ntima	Kithirune	Ruiri
Kithino	Nyaki	Githongo	
Mariara	Nkando	Katheri	Buuri
Katheri	Mukiria		

Source: Survey Data

Thus, MCFCU consists of fourteen coffee primary societies and eleven dairy societies . Before the Union constructed its own milk processing plant (with aid from Finland), it used to market much of its milk to Kenya Co-operative Creameries (KCC) plant in Kiganjo, and the rest within the district. At that time the union experienced five major problems: (1) KCC quota market was limited; (2) A lot of milk used to coagulate on the way to the market; (3) High transportation costs; (4) Very high input prices; and (5) Poor pay per kilogramme of milk sold.

There are approximately 300 employees within the coffee co-operative societies, 66 in Dairy societies, and 220 union employees. Thus, the union is a major employer in the district.

Among all agricultural produce and marketing co-operative unions in Kenya, MCFCU has the largest investment, valued at Kshs.80,337,000 in 1986. The following are some of the assets of the Union: Imenti House Building in Nairobi, Afya Maize-Mill in Meru, MCFCU Building in Meru, Milk processing plant in Meru, consumer-shop in Meru, Petrol Station in Meru, Meru Central Farmers Co-operative Bank, and Nanyuki coffee go-down.

The Union at present offers a variety of services to the primary Co-operative societies, such as construction, maintenance and repair of coffee factories, maintaining books of accounts, providing internal auditors, supplying all coffee inputs (e.g fertilizers, herbicides, insecticides), and banking.

The MCFCU management committee oversees the running of the Union on behalf of the members. The management committee is made up of two representatives from each of the primary co-operative societies.

Most of the members of MCFCU do not have reasonable access to the health services in the private sector. MCFCU at the moment is playing only a passive role in the health care of the members. Out of the five primary coffee co-operative societies visited, only one (Nkuene) had prior arrangements with a mission hospital for medical treatment of its members. With official letters from the society, members could be treated at the hospital. However, a farmer must demonstrate evidence of harvest of a certain quantity in order to get a recommendation letter to the hospital.

According to the respondents from Nkuene society, the aforementioned arrangement is highly inconvenient. Since the Union management deducts all the debts owed by a member at once, some members are left with zero net-income after paying their hospital bills. On such an event, the member is subjected to a lot of suffering. Since majority of the farmers depend on their coffee income for education of their children, the latter are occasionally forced to drop out of school due to lack of fees.

The above problem justifies a careful exploration of the possibility of introducing a prepaid Health Programme among MCFCU members.

CHAPTER THREE

3.0: LITERATURE REVIEW

3.1: Introduction

This Chapter reviews various studies that have been done in different parts of the world, where the Co-operative movement is being used as a strategy for National Health for All by the year 2000. The Chapter closes with a critique of reviewed studies. No studies on the economics of prepaid health services are available in Kenya, and apparently none exists. Otherwise a few studies do exist from other countries.

3.2: Experiences with prepayment schemes

When World governments accepted the primary health care accord of Alma-Ata in 1978, they soon realized that public funds, even when augmented by donor assistance, could not finance primary health care services for everyone. Therefore, alternative financing schemes are needed if primary health care services are to be extended to all communities. Realization of this goal calls for community participation in health care programme via agricultural co-operatives (Saward and Fleming, 1980), or through other mechanisms.

In 1929, the first health co-operative, the Community Hospital Association, was formed in Elk city, Oklahoma. It was the forerunner of the Kaiser Health Plan and the Group Health Association in Washington D.C. based upon prepaid group practice. Successful implementation of Health Maintenance Organizations (HMOs) in U.S.A. has presupposed the fulfillment of certain conditions: sponsorship, Membership, payroll deductions and a medical group willing to practice this form of medicine. HMOs face certain difficulties in delivering services, viz. leasing facilities, financing and unfavourable legal climate. However, though quite successful in urban areas, HMOs in USA have not been successful in providing services to poor, rural areas and areas where physicians and other health providers are maldistributed (Hinman, 1985).

In Czechoslovakia there is a voluntary health insurance programme for co-operative farmers. On farmers approval, the co-operative concludes a contract in the name of all members. Under a contract the member is entitled free treatment, reimbursement of fare costs and other varying benefits. Premiums are drawn from their social fund (Hack, 1962).

Even in Netherlands, dairy co-operatives have taken collective insurance on behalf of the members. Their premiums are deducted from their income for milk delivered to the Co-operatives (Nationale Co-operative Raad, 1964).

In 1969, co-operative medical systems were established in 18 communes and 238 brigades of Shanghai County in China. Currently a total population of 400,000 people who live in the Communes in the County, approximately 360,000 (90%) have opted to be members of co-operative system. Brigade members not covered in such a system, were already insured by a Commune Collective insurance plan for factory or enterprise workers or are the children of someone with health insurance that include them. Co-operative medical systems are usually established in rural areas at the brigade level by commune members. Essentially they are community health insurance or prepaid medical plans that have been designed to low cost, and efficient health services. Prepayments, registration fees, sales of traditional medicines and collective welfare funds, forms the major sources of income for co-operative health care systems. These funds are used to purchase drugs and equipment for the brigade health centres (i.e. 52%) and to refund referral costs (44%) (Xiao-Ming and Xi-fu,1982).

In April 1976, the Korean Health Development institute was established to develop a new better system of providing health care to low income groups. The programme has not been successful due to various problems, such as, high premiums collecting expenses and opposition from pharmacists. Moreover, healthy families were unwilling to join, hence limiting the membership to 60% - 70% of a village population and skewing the membership towards those who anticipated more sickness (Park, 1985)

Small community based health schemes exist in India, Bangladesh, Indonesia, Sri lanka, Pakistan, Argentina, Mexico and Cuba. In Bangladesh however, efforts to promote pre-payment schemes in 1973 and 1975 failed due to households inability to pay premiums. In 1970s at Kaira, in India,a dairy co-operative health programme was created whereby the co-operative system would provide basic prepaid health care to its members, especially for mothers and infants in villages (Halse, 1985).

Payment mechanisms frequently undermine primary health care planning, projects and programmes (Taylor, 1985). It is impossible to maintain effective and continuing primary health care, because of recurrent cost problems. Thus it is essential to build local financing capacity and thereby develop self-reliance in health care.

3.3: Empirical Studies on Prepaid Health Services

McGuire (1984) did an empirical study of demand for membership at a prepaid group practice among employees of Yale University. The probability of joining the prepaid group was estimated to be a function of the relative price of the prepaid group, the Yale Health Plan (YHP), and a conventional third-party insurance plan (Blue Cross), the distance of residence to the prepaid group, the demand for medical services and the perceived quality of services at the prepaid group. He estimated a linear probability model and a logistic equation for the decision of whether to join either the YHP or Blue Cross. His findings were as follows:(t - ratios are in parenthesis)

(a) $P_1 = .695 + .0115\ SALAR + .0065\ YEARS - .13582\ RACE, R^2 = .0526$
$\qquad\qquad\qquad\qquad\quad (2.4)\qquad\quad (2.3)\qquad\quad (2.6)$

(b) $\ln\ (P_1/1-P_1) = .1757 + .05476\ SALAR + .03582\ YEARS - .3810\ RACE$
$\qquad\qquad\qquad\qquad\qquad\qquad\quad (2.4)\qquad\quad (2.3)\qquad\quad (2.4)$

where.

P_1 = the probability of joining either the YHP or Blue cross;

SALAR = Salary;

YEARS = number of years that an employee has been in New Haven;

RACE = empoyees race (white or non-white)

His findings for P_2. i.e., the probability of joining the YHP given that YHP or Blue Cross has been joined were as follows:

(a) $P_2 = .5655 - .1631$ SEX $+ .1640$ CORP $- .00650$ DISTA $+ .0400$ PRICE
(3.4) (2.1) (2.4) (5.4)

$- .0100$ YEARS $- .1500$ YEARSB $R^2 = .205$
(2.8) (2.7)

where;

P_2 = the probability of joining the YHP given that YHP or Blue cross has been joined;

SEX= male or female;

CORP= 1,if the employee is a high level administrator at YALE and 0 otherwise;

DISTA= distance from employees place of residence to the Plan;

PRICE= price at which insurance options are available;

YEARSB= measure the effect of having been in New Haven and made contacts with local practitioners before opening the YHP. His most significant finding was that employees are quite sensitive to the price at which insurance options are available. The distance of an employee's residence from the YHP significantly affects the likelihood that the employee joins the plan. There was no indication from McGuire's study whether persons with high or low demand for medical services tend to join a prepaid group in preference to a conventional third party insurance plan.

The proposed study agrees with Badran (1985) that premium payment mechanisms should remain flexible. Premiums can be structured by reference to the community's cycle of seasonal economic activity rather than on a strict monthly or regular basis. However, the proposed CHP will differ from the co-operative medical systems in China and USA, in that, the former will not participate directly in the delivery of health services.

With the exception of McGuire's (1984) study, other studies on co-operative health services have a major weakness: the methodology used does not provide a conceptual basis for evaluating the empirical results of co-operation outcomes. They have used mainly descriptive and inferential statistics. None of the other studies reviewed has used econometric model to analyse the co-operative members' choice behaviour. Use of scientific methodology may yield better results. "The empirical results of the scientific methodology should provide a sound basis for policy action and thereby entail few policy errors and their attendant costs-the scientific approach should provide a basis for explaining policy errors and revision of prior expectations of results of present policies." (Ayako,1986:6).

CHAPTER FOUR

4.0: FIELD-WORK METHODOLOGY

4.1: Introduction

Due to time and budget constraints it was not possible to study all the agricultural Co-operative Unions in Kenya. Therefore, to accomplish the objectives of this study, a case study of Meru Central Farmers Union (MCFCU) was done. Among all agricultural producer and marketing co-operatives, MCFCU, has the biggest investment: valued at KShs.80,337,000 (MOCD, 1987). The Union is made up of twenty-five primary Co-operative societies with a membership of about 70,000 co-operative members. Fourteen of them are coffee co-operative societies, while the rest are dairy co-operative societies. Meru District, by 1978 had the highest percentage (that is 94%) of farmers who belonged to the co-operative movement (Heyer, 1978).

The data for this study were collected by administering a questionnaire to each co-operative member in a randomly selected sample. It was structured in a manner that made it possible to gather data about the following socio-economic attributes of the sampled households and programme specific attributes:

(a) Name of Primary Co-operative Society into which the co-operative member belongs;

(b) Co-operative members serial number;

(c) Members Share number;

(d) Members marital status;

(e) Single Children;

(f) Age in years;

(g) Health status;

(h) Membership to another health insurance programme;

(i) Coffee income during 1985/86 co-operative financial year;

(j) Facility in which a member normally seeks treatment when sick;

(k) Quality of treatment received from the existing health facility visited;

(l) Total number of visits to the facility over December 1987 and January 1988;

(m) Total fees paid for treatment over those two months;

(n) Members willingness to join CHP at zero premium;

(o) Willingness to enrol in CHP if the premium were KShs.65.00;

(p) Willingness to join CHP if the premium were Kshs.100.00;

(q) Willingness to enrol in CHP if the premium were KShs.200.00;(The premium levels of shs.65, shs.100 and shs.200 are those the majority of cooperators in the study area can afford to pay);

(r) Hospitals within the district that co-operators would like to be included into CHP;

(s) Distance to the nearest attainable health facility;

Interviews were also held with the MCFCU Assistant Manager to obtain his views about employees health programme and to find out whether the union would be willing to introduce CHP. Also since the Management Union Committee oversees the running of the Union affairs on behalf of the co-operative members, the Chairman was interviewed to obtain his views about the viability of CHP.

Health care providers from Nkubu, Maua, Kirua, Nairobi and Chogoria hospitals and from Meru Nursing Home were interviewed. These were randomly drawn from the ones that the co-operative members said they would like CHP to make arrangements with.

Permanent Secretaries in the Ministries of Co-operative development and Health were interviewed to determine whether their ministires would give support to a CHP.

2: Sample Selection

Two stage random sampling method was used. The first stage s to select five primary coffee co-operative societies (i.e. rigaMieru, Kianjuri, Nkuene, Ruiri, Nyaki) from the union. ch of the fourteeen primary coffee co-operative society was loted a serial number. Then a sample of five societies was awn using a random number table.

Each of the above societies maintains a register for all its mbers. The register indicates the co-operative members share mber, name, date of registration, nominee, village name and tivity number, where activity refers to the number of the ctory in which a co-operative member takes his coffee. The co- erative members share numbers exists in the order in which the mbers planted their coffee.

The second stage involved drawing of sixty co-operative mbers from each selected primary units. There was no need to range the names of members and allocate them serial numbers nce they had their share numbers which were used in drawing the mple. To minimize the chances of drawing inactive members as 1985/86 financial year, only those farmers who were registered -operative members by 31st December, 1984 entered the draw. other precautionary measure was to draw twenty cooperative mbers in the excess of the desired sample size of 40 from each ciety. For example, in Ruiri Coffee farmers Co-operative

society, the first member to be registerd had share number 0001, while the last registerd as at 31st December, 1984 had the share number 2417. After identifying the first person and the last to register the four digit columns of the random number table were systematically followed, drawing each share number within the limits. Any share number encountered more than once was ignored.

After drawing a sample of 60 co-operative members from each society the next step was to pick their names and activity numbers from the society's register. For ease of locating the members, they had to be arranged according to their respective factories. In Kianjuri co-operative society members were, to begin with, visited in their homes, but most of them were too suspicious to provide responses to questions. To overcome that obstacle, arrangements were made with factory managers to assemble the respondents on appointed dates for interviews. Assembled members were briefed on the purpose of the study. They were given time to ask questions and make suggestions pertaining to the proposed CHP. Then personal interviews ensued. This was done to dispell any fear and chances of collusion. Efforts were made to follow up those respondents who didn't avail themselves during the appointed day of the interview.

However, not all the co-operative members in the sample provided data for this study. For example, some members who were deceased still appeared in the register. Other members in the sample were inactive. Especially in Upper parts of Nkuene some members had already uprooted their coffee trees and planted tea instead. Efforts to trace those potential respondents who had transferred to some other societies were futile. Yet, there were those who had sold their coffee shambas and migrated to different parts of the district. The problems can partly be attributed to the lack of register updating. These loopholes reduced the sample of respondents from 300 to 209.

4.3: Limitation of the Sample

This study omits four major groups of farmers in Meru Central Zone; viz. farmers who are active but registered after 31st December, 1984; Other Cash Crop growers (e.g. Tea, Pyrethrum, Tobacco, Cotton, etc.); farmers who grow food crops exclusively; and dairy cattle farmers.

CHAPTER FIVE

5.0: THEORETICAL FRAMEWORK

5.1 Introduction:

Once a CHP is established, Co-operative members would use its services or those of the existing health system (EHS).

The CHP may bargain for cheaper health services for its' members. It is assumed that CHP would select fee-for-service clinics, private and mission clinics, from which co-operative members can get treatment. This is because cooperative members already have access to free public health sector services. By organizing co-operative members into a single buyer of health services in an agricultural area, the CHP could assume powers of a monopsonist and thus might be in a position to negotiate better prices for its members.

CHP may have two other advantages. First, it might redistribute income from the healthy members to sick members because the latter would get services which have been paid for by contributions of the healthy members. Second, since costs of treatment in the fee-for-service clinics are assumed to decline with the introduction of CHP, patients could be redistributed among public and private health facilities in such a way that health services coverage may increase. CHP would probably increase access to health services because more people would use private health services because their cost is likely to decline.

5.2: Model Specification

We assume that the co-operative members strive to attain the highest possible satisfaction from the consumption of goods and services, including health services, given their budget constraints. Thus, if CHP exists, a co-operative member will opt for CHP only if he expects an improvement in his welfare. At different prices (premiums), a co-operative member might make varied choice decisions. For example, ceteris paribus, the co-operator might decide to join CHP when its premium is at Shs. 65 or Shs. 100, but might not opt for CHP if its premium is set at Shs. 200

Probability of joining the CHP

Co-operative members' decision to join CHP can be assumed to depend on their own characteristics and programme specific attributes. The Co-operative member's decision process can be expressed as:

$$U_{ic}=U_{ic}(R_{ic}) \qquad \text{-----(1)}$$

Where,

U_{ic} = the utility that co-operative member i expects to derive from CHP.

R_{ic} = a vector of socio-economic characteristics specific to co-operative member i and the attributes of CHP.

Equation(1) may be rewritten as:

$$Uic=U_{ic}(Zj),\ j=CHP,EHS \qquad \text{---(2)}$$

Where,

$Z_s = B_s R_s$ and $Z_c = B_c R_c$

Where Z_s and Z_c are benefits expected from options EHS and CHP respectively.

B = Parameters to be estimated.

The probability that the i^{th} co-operative member will opt for CHP, given his characteristics and programme specific attributes may be expressed as:

$$P(j=CHP) = \frac{\exp(U_c)}{\exp(U_c)+\exp(U_s)}$$

OR

$$P(j=CHP) = \frac{\exp(B_c R_c)}{\exp(B_c R_c)+\exp(B_s R_s)} \quad --(3)$$

Equation (3) can further be simplified as follows:

$$P(j=CHP) = \frac{1}{1+\exp(B_s - B_c) R_j} \quad ---------(4)$$

Disaggregating R, we get the following set of independent (explanatory) variables indicated in Table 5.1 in section 5.3 below:

5.3: Definition of Variables

Table 5.1 gives definitions of variables in the estimated model.

TABLE 5.1: DEFINITION OF VARIABLES

Independent Variables	Variable Description	Expected sign
WED	Marital Status - Dummy variable 1 if married and 0 if single.	UNCERTAIN
CHILD	Number of unemployed single children that a co-operator has	POSITIVE
AGE	Member is Age in years	UNCERTAIN
ILL	Members household health status 1 if there is a sick household member and 0 if none.	POSITIVE
OTHER	Membership to another health insurance programme: 1 if YES and 0 otherwise.	UNCERTAIN
INC	Income from sale of coffee, 1985-1986 in shillings	POSITIVE
MED	Quality of treatment, 1 if Excellent and 0 if Poor	POSITIVE
VIS	Number of visits to an EHS facility in months(i.e. Dec. 1987 and January, 1988)	UNCERTAIN
EE	Expenditure on health services over Dec.1987 and Jan. 1988.	NEGATIVE
M	Distance (in kilometres) to nearest health facility.	NEGATIVE

The Dependent Variables are:

P65	Willingness to enrol in CHP if premium is Kshs.65.00
P100	Willingness to enrol in CHP if premium is Kshs. 100.00
P200	Willingness to enrol in CHP if premium is Kshs.200.00

5.4: Estimation Procedure

Linear probability model was used to analyze co-operative members choice of health insurance programme. The aim was to estimate the probability of an individual co-operative member joining CHP conditional on his social attributes. The estimations were at three different levels of premium (at KShs65.00, KShs100.00 and KSh200.00).

Two hundred and nine observations were used for estimation purposes. The following equation was estimated at the three premium levels:

$$Pic = B_0 + B_1 WED + B_2 CHILD + B_3 AGE + B_4 ILL + B_5 OTHER + B_6 INC + B_7 MED + B_8 VIS + B_9 FEE + B_{10} KM + e_i \quad \text{----- (5)}$$

Where

Pic is the probability of co-operative member i joining CHP, and the other variables are as defined in table 5.1. Equation (5) was first estimated with all the observations and then with observations for each of the five primary co-operative societies.

5.5: Economic viability of CHP

The major policy issue in this section is: would CHP be economically viable ? To be able to answer this question, we need to compare CHP's expected revenue with its anticipated expenditure.

The Expected Revenue (ER) from CHP in two months time would be:

$$ER = EN \times P_m$$

where

EN is the number of co-operative members expected to join CHP, EN is equal to the number of co-operative members in the sample times probability of a member joining CHP; P_m is the premium paid by each member.

The Expected Health Expenditure (EC) of CHP would be:

$$EC = NS \times P_c$$

Where

NS = Expected number of clinic visits in two months; this NS is equal to the number of co-operative members in CHP times probability of visiting CHP clinic.

P_c = Average cost of a visit.

If ER ≥ EC, then CHP is economically viable.

5.6: Cost-Effectiveness Analysis of CHP

The aim of this part of the study is to evaluate the cost effectiveness of CHP and EHS, from the co-operative members perspective. This part will address itself to the following questions: What expenditures do the co-operative members incur in the EHS? What will they incur under the proposed CHP? Which of the two systems is cheaper?

"Cost- Effectiveness Analysis (CEA) is a formal process for organizing information so that costs of alternatives and their relative effectiveness in meeting a given objective can be compared systematically." (Gaspari and Reynolds, 1985/7). Cost-Effectiveness refers to the achievement of an objective with the minimum expenditure of resources.

CEA is used as a decision making tool to help policy makers and programme managers select a future course of action. This analytical tool can be used in the evaluation of programme is already in action (i.e., a retrospective CEA) or in an evaluation of programmes that have not yet been implemented (i.e., prospective CEA). The latter is an analysis of what the costs and effectiveness of two or more alternatives are likely to be. CEA can be used to determine whether CHP is cheaper than EHS.

(a) Cost of EHS to households can be assessed as follows:

$$C_A = K \times NS \times P_c$$

Where

C_A = Total Expenditure by co-operative members in the EHS.

K = Number of co-operative members needing treatment.

NS = Number of visits per person in two months time.

P_c = Average cost of a visit

(b) Cost of CHP to households

$C_B = N_c \times P_m$

Where

C_B = Expected total expenditure by co-operative members from CHP.

N_c = Number of CHP members requiring treatment.

And N_c is assumed equal to K.

P_m = Premium for two months. It is assumed that other costs of CHP and EHS, such as the time costs are the same.

If $C_B < C_A$, the CHP is cheaper than EHS. Assuming effectiveness is not the same in the two programmes, e.g if different proportions of co-operators are fully covered throughout the year under the two systems, CHP is cost effective if $C_B/V_B < C_A/V_A$;

Where V_B = proportion of co-operative members whose health needs would be met throughout the year under CHP.

V_A = Proportion of co-operative members whose health needs are satisfied throughout the year under EHS.

CHAPTER SIX

6.0: EMPIRICAL RESULTS

6.1: Introduction

This chapter presents results of estimation of the choice model discussed in the preceding chapter. The results are in three sections. Section 6.1 Contains descriptive statistics. Section 6.2 reports the maximum likelihood estimates of the coefficients of the variables defined in section 6.1, while sections 6.3 and 6.4 discuss economic viability and cost-effectiveness of CHP.

As mentioned earlier, the coefficients β, are the preference parameters of the co-operative members. They provide numerical information about the effects of a given factor or variable on co-operative members' decisions to join a certain health programme. A positive coefficient of a variable indicates that an increase in that variable increases the probability of joining a given health programme, whilst, a negative coefficient shows that an increase in the variable reduces the chances of joining a given health programme.

Descriptive Statistics

E 6.1: VARIABLE DEFINITIONS AND DESCRIPTIVE STATISTICS

Variable	Mean Value	Std. Dev.
ital Status: a dummy is equal 1 if a person ried and 0 if otherwise)	0.91	0.30
Number of children)	4.32	5.58
ber's age in years)	42.78	13.47
alth status: a dummy ES and 0 if otherwise	0.39	0.52
lembership to another ogramme: a dummy 1 if YES nd 0 if otherwise)	0.16	0.38
come in Shillings)	7559.5	12281
ity of treatment: a ummy 1 if Excellent and 0 therwise)	0.52	0.54
its to the EHS over he two months)	5.32	8.81
ical expenses incurred ver the two months)	322.39	734.24
ance in Kms)	6.88	2.92

rom table 6.1, it is clear that co-operative members on e incur a substantial amount of money on health services.

The average coffee income per month for any farmer is KSh.630 (which has been derived by dividing average annual income by twelve months). These statistics suggest that a co-operative member spends one-quarter of his earnings to purchase medical services.

6.3: Regression Results for the Whole Sample

The results of the estimated model are presented in table 6.2. As noted in chapter 4, the effects of co-operative member personal characteristics and health programme specific attributes on their choice of health programme were estimated at three different premiums that members would have to pay to get the services. That is, at KShs.65.00; KShs.100.00; and KShs.200.00.

The reason of estimating the model at the three levels of premium, was to see how co-operative members choice decision changes as the premium varies.

TABLE 6.2: MLE RESULTS FOR THE WHOLE SAMPLE

Dependent variable: Pic(=probability of joining CHP). It is a dichotomous variable, which takes a Value of 1 if a respondent was willing to join CHP and a value of zero otherwise.
(T- Rations are in parentheses)

Premium Level	Constant	WED	CHILD	AGE	ILL	OTHER
Sh.65	1.253	0.029	0.005	-0.007	0.034	-0.589
	(14.30)	(0.44)	(1.35)	(-4.57)	(0.91)	(-1.16)
Sh.100	1.239	-0.159	0.0068	-0.0077	0.054	-0.043
	(8.87)	(-1.52)	(1.08)	(-3.27)	(0.91)	(-0.531)
Sh.200	0.772	-0.14	0.007	-0.0026	-0.005	0.124
	(4.71)	(-1.11)	(0.96)	(-0.96)	(-0.79)	(1.30)

Table 6.2 Cont.

INC	MED	VIS	FEE	KM	D.F.	LOG OF THE LIKELIHOOD FUNCTION
0.00000011	-0.073	0.00049	0.000003	-0.0096	198	-41.571
(0.067)	(-2.021)	(0.20)	(1.085)	(-1.513		
0.0000058	-0.063	0.00035	-0.000006	-0.0094	198	-98.301
(2.18)	(-1.096)	(0.089)	(-1.24)	(-0.93)		
0.0000091	-0.712	-0.0002	-0.000004	-0.016	198	-131.28
(2.91)	(-1.05)	(-0.042	(-0.78)	(-1.32)		

The AGE coefficient is highly significant at the first two
els of premium, with a negative sign at all the levels. The
people appear to be preferring to remain in EHS, rather than
ture into the new CHP, whose future is uncertain, thereby
rting the risk of subscribing to a programme which might
er take-off.

The coefficient of income variable assumed a positive sign
expected) at all the levels of premium. It was statistically
nificant (at 5%) at the last two levels of premium. The
itive sign indicates that as co-operative member's income
reases his probability of joining CHP increases.

The quality of treatment (ILL) coefficient was generally
ative but only significant at KShs.65.00 level of premium.
s suggests that if a co-operative member has access to the
sting quality health care services in EHS, there may be no
lt of him joining CHP.

The coefficients of marital status, number of children, health status, membership to another health insurance programme, number of visits, medical charges and distance variables were statistically insignificant at all levels of the premium. As expected, the coefficients of number of children and distance variables took positive and negative signs respectively. The former implies that the presence of at least one child in a household has a substantial positive impact on the probability of joining a CHP. While the latter sign shows that as the distance to a facility of any health programme increases, the probability of joining that programme diminishes.

6.4: Regression Results for Each Society

The findings for all societies at the premiums KShs.65.00, KShs.100.00 and KShs.200.00 are presented in tables 6.3,6.4, and 6.5 respectively. The aim of this part is to determine whether the importance of each explanatory variable changes as one moves from one primary society to another. That is to discover whether co-operative members preferences for CHP are stable across primary societies.

:BLE 6.3: REGRESSION RESULTS AT THE PREMIUM OF FCHS.[illegible]S BY TYPE OF SOCIETY.

Dependent variable: Pic(= Probability of joining CHP)
T-Ratios are in parenthesis)

SOCIETY'S NAME	CONSTANT	WED	CHILD	AGE	[illegible]L	OTHER
MEDA-WERU	1.214	0.275	0.024	-0.0086	-0.0054	-0.157
	(3.71)	(1.30)	(0.949)	(-1.85)	(-0.04	(-1.04)
MAFI	1.2	-0.395	0.167	-0.0043	0.22	-0.186
	(5.99)	(-2.65)	(5.12)	(-1.05)	(1.86)	(-1.27)
CHAMUKI	0.968	-0.018	0.018	0.002	-0.18	-0.099
	(4.195)	(-0.12)	(1.22)	(0.53)	(-1.56)	(-1.11)
MUENE	1.537	-0.068	0.27	-0.013	0.154	0.071
	(6.53)	(-0.41)	(1.21)	(-3.78)	(1.54)	(0.44)

Table 6.3 Cont.

INC	MED	VIS	FEE	FM	DF	LOG-LIKELIHOOD
-0.00002	-0.016	-0.57	0.000092	-0.043	29	-9.46
-3.07)	(-0.13)	(-0.18)	(0.28)	(-1.12)		
0.00001	0.026	-0.056	-0.00059	-0.826	29	
1.93)	(0.22)	(-1.81)	(-1.21)	(-0.45)		
-0.000007	-0.0776	0.0042	-0.00002	-0.007	36	
-1.85)	(-1.27)	(0.79)	(-0.40)	(-0.429)		
0.000002	-0.083	-0.013	0.00027	-0.153	30	
1.73)	(-0.74)	(-1.05)	(1.12)	(-0.79)		

TABLE 6.4: REGRESSION RESULTS AT THE PREMIUM LEVEL OF KSHS.100 BY TYPE OF SOCIETY.

Dependent variable: Pic(= Probability of joining CHP)

(T-Ratios are in parentheses)

SOCIETY'S NAME	CONSTANT	WED	CHILD	AGE	ILL	OTHER
RUIRI	1.093 (5.31)	-0.316 (-1.56)	-0.015 (-1.67)	0.0045 (1.40)	0.029 (0.33)	0.056 (0.65)
MIRIGA-MIERU	0.824 (1.81)	-0.271 (-0.92)	0.773 (2.18)	-0.007 (-1.01)	-0.084 (-0.40)	-0.341 (-1.63)
NYAKI	1.31 (4.21)	-0.506 (-2.17)	0.139 (2.72)	-0.015 (-2.40)	0.186 (1.01)	-0.231 (-1.01)
KIANJURI	1.225 (3.39)	0.014 (0.05)	0.014 (0.50)	-0.005 (-0.80)	-0.334 (-2.19)	-0.015 (-0.09)
NKUENE	1.61 (4.08)	-0.466 (-1.69)	-0.08 (2.13)	-0.004 (-0.67)	0.129 (0.77)	-0.109 (-0.41)

Table 6.4 Cont.

INC	MED	VIS	FEE	KM	D.F.	LOG-LIKELIHOOD
0.000012 (1.83)	-0.152 (-2.13)	0.006 (1.00)	-0.0001 (-1.66)	-0.001 (-0.10)	30	
-0.00001 (-0.900)	0.181 (1.09)	-0.101 (-0.22)	0.000054 (0.12)	-0.0032 (-0.06)	29	-19.344
0.00002 (1.57)	0.292 (1.58)	-0.018 (-0.37)	-0.00032 (0.42)	-0.00074 (-0.03)	29	
0.000005 (0.73)	-0.329 (-2.91)	-0.117 (-0.12)	0.000003 (0.03)	-0.17 (-0.57)	36	-14.496
0.000005 (0.90)	-0.154 (-0.81)	0.006 (0.30)	-0.18 (-0.47)	-0.666 (-2.05)	30	-14.442

TABLE 6.5: REGRESSION RESULTS AT THE PREMIUM LEVEL OF KSHS.200 BY TYPE OF SOCIETY.
Dependent variable: Pic(= Probability of joining CHP)
(T-Ratios are in parentheses)

SOCIETY'S NAME	CONSTANT	WED	CHILD	AGE	ILL	OTHER
RUIRI	0.00003 (0.00)	-0.022 (-0.06)	0.0007 (0.43)	0.011 (1.85)	0.023 (0.15)	0.237 (1.49)
MIRIGA-MIERU	0.66 (1.43)	-0.112 (-0.38)	0.016 (0.44)	-0.005 (-0.78)	-0.351 (-1.65)	-0.403 (-1.89)
NYAKI	0.408 (1.20)	-0.63 (-2.49)	0.109 (1.97)	-0.00021 (-0.03)	0.149 (0.74)	0.123 (0.49)
KIANJURI	1.882 (3.39)	-0.188 (-0.05)	0.018 (0.50)	-0.013 (-0.80)	-0.217 (-2.19)	0.041 (0.09)
NKUENE	0.517 (1.31)	-0.597 -2.17)	0.045 (1.94)	-0.006 (-0.97)	0.322 (1.93)	0.484 (1.82)

Table 6.5 Cont.

INC	MED	VIS	FEE	KM	DF	LOG-LIKE LIHOOD
0.00002 (1.59)	-0.194 (-1.48)	-0.203 (-1.80)	-0.00003 (-0.26)	0.37 (1.99)	30	-12.044
-0.00001 (-0.68)	0.442 (0.26)	-0.024 (-0.52)	-0.00013 (-0.271)	-0.00349 (-0.64)	29	-20.183
0.000015 (1.29)	0.446 (2.22)	-0.109 (-2.10)	-0.0011 (-1.39)	0.00081 (0.03)	29	-11.463
0.000004 (0.73)	-0.178 (-2.91)	-0.00041 (-0.12)	-0.000041 (-0.03)	-0.093 (-0.57)	36	-24.671
0.000000 (1.46)	-0.091 (-0.48)	-0.017 (-0.81)	-0.003 (-0.70)	-0.027 (-0.83)	30	-14.017

6.5: Discussion of Results

The coefficient for the WED variable is only significant in the case of Nyaki (at all premium levels), and for Nkuene (only at KShs.100). Generally, with the exception of MirigaMieru (at KShs.65) and Kianjuri (at KShs.100), the coefficient has assumed a negative sign in all the societies. This implies that a married person in these societies has a tendency not to join CHP. On the other hand, in MirigaMieru, married co-operators are inclined to joining CHP.

The CHILD coefficient is generally positive for all the societies (with exception of Ruiri at KShs.100); and statistically significant for MirigaMieru, Nyaki,and Nkuene societies. This positive coefficient suggests that in all the societies and at all levels of premium, people with many children perceive CHP as beneficial and would be willing to join it.

The coefficient of AGE is only significant in the case of Nkuene and Nyaki at premium levels of KShs.65 and KShs.100 respectively. It has a negative sign for all those other societies with exception of Kianjuri and Ruiri, which have positive signs. A negative sign implies that old people do not expect to benefit from CHP membership and would therefore not want to acquire it. They would not be willing to join CHP if introduced in their societies. In the case of Kianjuri, the

positive signs, indicate that old members would be more willing to enrol in CHP than young co-operative members.

The ILL variable coefficient is only statistically significant for Kianjuri,but at a very low level of confidence. The coefficient has a negative sign in the case of MirigaMieru and Kianjuri, and a positive sign in other societies. A negative sign implies that the presence of a sick person in a household decreases the probability of joining CHP, whereas a positive coefficient indicates that the presence of a sick household member in the last two societies, increases the probability of joining CHP.

The coefficient of OTHER variable is statistically insignificant for all the societies at the three premiums. With the exception of Nkuene and Ruiri, it bears a negative sign in all the other societies at the first two premiums. However, at KShs.200 only the coefficient for MirigaMieru has a negative sign. Inverse relationship suggests that if a co-operative member is already a member of another health insurance plan, he is unlikely to join CHP.

The coefficient of INC for MirigaMieru is somewhat significant, with a negative sign throughout; but those for Nkuene and Nyaki are insignificant and positive. A negative sign shows that low income co-operative members perceives CHP as beneficial, and thus would be more willing to join it than the high income households. In contrast, high income households in Nyaki and Nkuene, are more willing to enrol in CHP.

The coefficient of the MED variable is only significant for Ruiri and Kianjuri (at KShs.100), and for Nyaki at KShs.200; with a negative sign. However, for Nyaki and MirigaMieru (at KShs.100 and KShs.200), the coefficient has a positive sign. A negative sign shows that as the quality of EHS improves the probability of joining CHP falls.

The coefficient of VIS variable is insignificant in all the societies except for Nyaki (at KShs.200). Apart from Nkuene (at KShs.100), KM variable coefficient is statistically insignificant. The coefficient of FEE variable is also insignificant at all premium levels and for all the societies. The findings about fees and distance indicate that these factors would not be very important in people's decisions as to whether to join CHP or EHS. These results are not in line with predictions of economic theory.

From the results presented in this chapter, it is evident that the magnitudes and direction of causation of the explanatory variables considered in the study vary from one primary co-operative society to another. Thus, the importance of any one independent variable in explaining whether a certain co-operator would join CHP varies from society to society. This is why it is difficult to come-up with a universal package of recommendations applicable to all the societies.

6.6 Economic Viability of CHP

In this section the economic viability results will be presented at the three levels of premium. The expected revenue of CHP in two months time was obtained by multiplying the number of co-operative members expected to join CHP by the premium each member would be required to pay in two months. Expected health expenditure of CHP was derived by multiplying the expected number of clinic visits in two months by the average cost per visit. This cost was obtained under assumption that average cost per visit in CHP would be equal to the average cost in EHS. Such an assumption might not be realistic because CHP would be in a better position to bargain for cheaper user charges. Thus recognizing the weaknesses of simple average, it was thought wise to present also the economic viability results using outpatient charges in a typical mission hospital in the study area. That is KShs.25.00 per visit. This is shown in tables 6.6 and 6.7 below:

TABLE 6.6: ECONOMIC VIABILITY RESULTS (WITHOUT BARGAIN)

Premium Level	Revenue From CHP (in Sh)	Cost of CHP Programme*	Net Benefit	Economic Status of CHP
KShs.65.	1,571.80	222,449.10	-220877	Not Viable
KShs.100.	2,365.72	217,935.64	-215570	Not Viable
KShs.200.	3,734.08	171,833.87	-168100	Not Viable

*Cost per visit in CHP was assumed to be equal to that of EHS.

TABLE 6.7: ECONOMIC VIABILITY RESULTS (WITH BARGAIN)

Premium Level	Revenue From CHP (in Shs.)	Cost of CHP Programmes	Net Benefit	Economic Status of CHP
KShs.65	1,571.80	17,250.00	-15678	Not Viable
KShs.100	2,365.72	16,900.00	-14534	Not Viable
KShs.200	3,734.08	13,325.00	-9591	Not Viable

*Cost in table 6.7 was calculated using mission hospital outpatient charge per visit.

It is clear from the above tables that the expected cost of CHP is greater than its revenue. Thus, this CHP would not be economically viable at any of the three premiums, given the prevailing costs of health care in the study area. And even if mission hospital outpatient rate is used, CHP would not break-even. Further calculations show that CHP would be close to breaking even at the premium of Kshs. 1535. The CHP would also break even at the premium of Kshs. 200 if cost of treatment per visit is shs.2.28. The latter calculations have been made under the assumption that all the cooperators in the sample would join CHP.

6.7: Cost-Effectiveness Analysis Results

The objective of this section was to enable us identify the least costly health programme. To achieve this goal it was necessary to evaluate the expenses that co-operative members incur in EHS and the expenses they would incur in CHP. It is assumed that the objective of any genuine health programme is to cover adequately (fully) the health needs of its members.

Subsection (6.8) presents the CEA results with effectiveness held constant. While subsection (6.9) reports the CEA findings when effectiveness is allowed to vary.

6.8: CEA Results With Effectiveness Held Constant

The CEA results presented in table 6.8 below, were obtained assuming the effectiveness of the two programmes to be equal. The calculations for cost of CHP were done at three levels of premiums. The number of facility visits in the two programmes was assumed to be equal.

TABLE 6.8: COST-EFFECTIVENESS RESULTS(WITH SAME EFFECTIVENESS ACROSS PROGRAMMES)

Premium Level	Services cost in EHS (Shs.)(C_E)	Services Cost in CHP (KShs)(C)	Cost Savings (KShs.)	Cost Effectiveness Status
KShs.65.	222,539.00	7,475.00	215,064.00	Cost Effective
KShs.100.	217,936.00	11,267.00	206,669.00	Cost Effective
KShs.200.	171,834.00	17,767.00	154,067.00	Cost Effective

Since $C_E > C_B$, if by any chance the premium is fixed at any of the three premium levels, CHP would be a more cost effective programme than EHS from co-operative members perspective.

6.9: CEA Findings With Varying Effectiveness

In this part, CEA was done with the recognition that the two programmes would be having different effectiveness rates or ratios. The proportion of co-operative members whose health needs would be fully met throughout two months time by CHP at each of the premium levels can be derived by dividing the number of co-operative members willing to enrol in CHP at each premium by the sample size. For example, at KShs.65 premium 145 co-operators are likely to join CHP. Thus, dividing 145 by 209, we get 0.694, which is the proportion of the sample that would be adequately covered under CHP. That is, 69.4% of the people in the sample. There is an implicit assumption that all the members of CHP would have their health needs fully catered for.

The proportion of co-operative members who are fully covered under EHS ought to be derived to enable us calculate its cost-effectiveness. It was assumed that respondents who said EHS services were poor due to shortage of drugs, are the portion that is not adequately covered in the existing health system. Thus to get the number that is fully covered, we subtracted the inadequately covered number from the total number of co-operators in the sample size. Then this difference was divided by the sample size to get the effectiveness of EHS. For instance, 106 members were not fully covered in EHS. So, subtracting 106 from 209, we get 103, which are the fully covered co-operative members. Dividing 103 by 209, we find that approximately 49% are fully covered. The findings are presented in table 6.9 below

TABLE 6.9: COST EFFECTIVENESS ANALYSIS, EHS AND CHP

Premium Level	Cost in EHS (A)	Proportion covered Under EHS (B)	EHS Cost Effectiveness Ratio (C) =A/B	Costs in CHP (D)
KShs.65.	222,539	0.493 (103)	2,161	7,475
KShs.100.	217,936	0.493 (103)	2,116	11,267
KShs.200.	171,834	0.493 (103)	1,668	17,767

Table 6.9 Cont.

Proportion Covered Under CHP (E)	CHP Cost Effectiveness Ratio (F)=D/E	IS F<C?	Cost Effectiveness of CHP
0.694 (145)	52	YES	Cost-Effective
0.694 (142)	79	YES	Cost-Effective
0.536 (112)	158	YES	Cost-Effective

*Real figures of co-operators fully covered in EHS and CHP are in parentheses in columns B and E respectively.

The above results indicate that CHP is the most cost-effective programme at all levels of premium. Even if the cost in CHP is varied by 50%, the above conclusion still holds.

CHAPTER SEVEN

7.0: RECOMMENDATIONS AND POLICY IMPLICATIONS

7.1: Introduction

This chapter evaluates the extent to which research objectives have been realized. The proposals for facilitating implementation of CHP are also noted. The chapter is concluded with policy implications.

This paper has studied decisions to join a new health plan (CHP) in relation to the attributes of the plan and socio-economic characteristics of decision makers. A co-operative member's decision to join a CHP was expressed as a function of marital status, family size, age, health status, membership to another health programme, income, quality of medical care and so on.

Economic viability and cost effectiveness of the proposed health plan, CHP, were also evaluated. Thus, an attempt was made to achieve the objectives of the study.

7.2: Policy Recommendations specific to the study area

On the basis of the findings of this study, it is recommended that the following proposals be implemented to facilitate the formation of co-operative members health programmes (CHP) in MCFCU, Meru District.

1. In general, an individual's income is directly related to the probability of enrolling in a CHP, thus, the policy makers ought to devise ways of raising co-operative members' income levels. That can be done by reducing export tax levied on coffee exports, and/or waive the cess (another form of tax) paid to the County Council.

2. Co-operative members should be educated on the merits and demerits of enrolling in a CHP. Emphasis should be given to the old members who appear to be highly risk-averse. The idea is that while they are trying to avert the risk of investing in a venture which has not yet taken-off, they are nonetheless running a great risk of falling sick and being unable to raise the user charges.

3. The Ministry of Health should consider subsidizing co-operators' Health programmes. This is because although CHP is more cost-effective than EHS, it is not economically viable even at the suggested upper premium of shs.200. This entails a need for cost-sharing between the government and co-operative members.

4. The Ministry of Health should evaluate the possibility of incorporating CHPs into National Hospital Insurance Fund (NHIF) framework. That might reduce the overhead and variable costs of CHPs.

5. If the programme has to be of any help to the majority of the people, the premiums should not be fixed at very high levels. This is because there is an inverse relationship between the premium to be charged and the probability of joining CHP.

7.3: Other Applications

The findings of this study are applicable to many agricultural Co-operative Unions in Kenya for a number of reasons.

First, the majority of peasant farmers in Kenya have a similar problem of inaccessibility to health services, which is a manifestation of Government's inability to provide all the people with adequate medical services. Thus, an exploration into the possibility of setting up CHPs in other unions is necessary.

Second, the bulk of Kenya's coffee is produced by peasant (small-scale) farmers. The co-operative members who provided data for this study were all small-scale farmers. So introduction of CHP would uplift health status of small farmers, and hence their productivity.

Third, although co-operative members share similar health problems, it is evident that the magnitude and direction of causation of the explanatory variables (the socio-economic characteristics and programme specific attributes) vary from one primary society to another. Thus, we are bound to have great variation in behavioral parameters as we move from one Union to another. This is why it is not possible to have recommendations that are universally applicable to all primary societies, leave alone unions.

We conclude that this study is relevant to the Kenyan economy for it implies that:

(a) If introduced, CHPs can increase the members' welfare.

(b) CHPs would help supplement government's effort to improve accessibility to health services in Kenyan rural areas.

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APPENDIX

SURVEY QUESTIONNAIRE

Before administering the questionnaire, the objective of the Study will be made clear to the interviewee.

A: TO BE FILLED BY COOPERATIVE MEMBERS

Cooperative Society Name: _____

Cooperator's Name: _____

Cooperator's Share No: _____

1. Marital Status a) Married ( )
   b) Single ( )
2. How many children do you have? _____
3. Your Age _____
4. Is there anybody sick in your household at the moment?
   a) Yes ( )
   b) No ( )
5. Are you a member of any health insurance programme?
   a) Yes ( )
   b) No ( )
6. Cooperator's Oct. 1986 - Oct. 1987 coffee income in Kenya Shillings. _____

7. When sick, where normally do you seek treatment?

   a) Government medical facility ( )

   b) Mission Medical facility ( )

   c) Pharmaceutical shops ( )

   d) Private medical facility ( )

   e) Traditional healers ( )

   f) Religious Spiritual Healers ( )

   g) Nowhere ( )

8. Could you assess the quality of treatment received?

   i) Poor ( )

   ii) Excellent ( )

9. Total number of visits to the facility over the last two months. _____

10. Total fees paid for treatment over the last months.

    KShs. _____

11. Suppose that your Cooperative Union introduces a Cooperators Health Programme (CHP), whereby, when a member of your household is sick, he or she can be treated in any facility of your choice. Would you be willing to enrol in the programme? (YES/NO).

12. But then, the Cooperative Union will have to deduct some money from your coffee income to meet the expenses. Would you be willing to enrol if the premium is KSh.65? (YES/NO). Would you still be willing to enrol if its KShs.100 (YES/NO). What about if its KShs.200? (YES/NO).

13. Which hospitals within the district would you like the Union to make the arrangements with?

Hospitals

_____

_____

_____

Reasons

(a) Reliable supply of Medicine

(b) Qualified personnel ( )

(c) Warm reception ( )

(d) Relatively lower fees for services ( )

(e) Nearness ( )

(f) Others _____

14. Distance to the nearest attainable health facility from your residence _____Km.

B. TO BE FILLED BY COOPERATIVE UNION MANAGEMENT

1. Do you have an health programme covering your employees?
YES ( ), NO ( )

2. Are all your employees covered? (YES/NO)

3. If answer to question 2 is NO, who are not covered?

_____

4. When did the programme start? _____

5. What premium does each employee pay? _____

6. Does all employees pay an equal premium? (YES/NO)

7. Which criteria did you use in setting the level of premium?

_____

8. Could you explain how you administer the programme?

_____

9. Which benefits does the insured employees get from the programme? _____

10. Why did you decide to to cover the health of your employees?

_____

11. Which problems did you encounter initially (when launching the programme? _____

_____

12. Are these employees free to seek treatment in any health facility of their choice? _____ 13. If the answer above is NO, from which facilities are they supposed to seed treatment? _____

_____

14. Which creteria did you use when selecting those medical facilities (i) Quality ( ) (ii) Public relations ability ( ) (iii) Experience with similar scheme ( ) (iv) Amount of discount ( ) (v) Others _____

15. What is the procedure of paying the select medical facilities?

_____

16. Are the premiums paid by the employees enough to meet the expenses or you do subsidize? _____

17. From the experience you have had with the program, are there any reforem (changes) you would like to make? _____

_____

18. Suppose that the cooperators want to be covered by a similar health programme (i.e. CHP), would you be willing to run such a programme? (YES/NO)

19. How much premium would you charge each of them per year? (i.e. Break-even premium) Kshs._____

20. What problems do you foresee in setting up and running such a programme?_____

C: TO BE FILLED BY COOPERATIVE UNION EXECUTIVE COMMITTEE

1. Suppose that the cooperative members decide that their cooperative Union should start a Cooperators Health Programme (CHP) to cover their health needs, would you be willing to support it? (YES/NO)_____

2. If YES, how much premium might they be require to pay? Kshs._____

3. Do you think they might have any difficulties in paying the premium? (YES/NO)_____

4. What benefits do you think that the farmers will dervie from CHPs?_____

5. Are there any problems that you foresee in running such a programee? (YES/NO)_____

D. TO BE FILLED BY HEALTH SERVICE PROVIDERS

Meru Central Coffee Farmers Cooperative Union might soon start a CHP to cover its members. With an aim of increasing their economic accessibility to quality health services. It has to select a few private and missinary hospitals, where its members and their households can be treated.

The most likely criteria to be used in selecting those facilities is:

a) system of deliverying health services must be acceptable to the cooperators (i.e. meet their approval)

b) quality of services and reliability:

c) level of discount.

d) legal contract.

Such programme could increase the demand for medical services in the chosen hospitals drastically.

1. Suppose your hospital is chosen, would you be able to cater for increased demand without lowering the quality of your service? (YES/NO)
2. How much discount could you give the union?
3. Would your hospital be willing to enter into a binding legal contract with the Union? (YES/NO)
4. Have you been involved in a similar programme before? (YES/NO). If YES, which problems do you experience?

   _____

5. Do you foreseee any problems in such kind of arrangement? (YES/NO)_____