RESEARCH METHODS

As shown in figure 2.2, this research will be a design study which involves modelling, and evaluation by simulation.

According to Kaewsonthi and Harding (1992), design studies may be concerned with the initial design and/or improvement in methods of enquiry and analysis to be used in descriptive. analytical, experimental, evaluative or forecasting studies.

This particular study is concerned with both initial design and improvement of earlier methods of ascertaining whether communities have the ability and willingness to financially support health care services: the control of onchocerciasis with ivermectin in this case. The steps in undertaking a design study as outlined by Kaewsonthi and Harding (1992) will be used in this study.

According to Maddala (1989), empirical econometrics work can be characterized as excessive pre-simplification with inadequate diagnostic testing. with the steps being: commencing with theories which are drastic abstractions of nature: to the formulation of highly parsimonious relationships to represent the theories: to estimating the equations from the available data using techniques which are "optimal" only on the assumptions that the highly restricted model is correctly specified: to testing a few of the assumptions explicitly or implicitly: to revising the specification in the light of evidence acquired; and finally to re-estimate accordingly.

Hendry's approach (quoted in Maddala. 1989) to model building which is mainly applicable to dynamic time-series models, can be summarized as intended over-parametrization with data-based simplification. He pointed out the drawbacks in empirical econometrics and concluded that until the model characterizes the data generation process. it seems rather pointless trying to test hypotheses of interest in economic theory.

This research will incorporate elements from these two approaches, with appropriate modifications. The theories to be formulated will not be drastic abstractions of reality, but will be as close as possible to real events. The relationships will not be parsimonious since the issue of onchocerciasis control with ivermectin like most other health care issues represent areas with clearly defined boundaries and concepts. Hence, the relationships are clear even in the light of market failures in the health care market. Hendry's approach will be used in constructing the ability and willingness to finance dynamic model.

In conclusion, the choice of a model in reality is almost made after some preliminary data analysis. For instance, in the case of a regression model, we start with a specification that seems most reasonable a priori. But after examining the coefficients, their standard errors and residuals. we change the specifications of the model (Maddala, 1989).

3.1 The approach to this research

Extensive literature review will be done. Then, the background information from the literature will be combined not only with this researcher's experience of disease control activities, but also with intuition and logic in designing all the components of this approach. This is through basing the research on sound understanding of the social, economic, and epidemiological conditions which create problems of disease as advocated by Rosenfield (1986). The invaluable experiences of the thesis advisers and committee members will also be incorporated.

This in effect means that Heuristic techniques will be used in developing the models of the approach. Heuristic models are not necessarily expected to produce the optimum solution. They are practical attempts to generate good. satisfactory solutions. based on what is known about the economics, politics, and sociology of the situation. to problems that contain some non-quantifiable elements (Blumenfeld, 1990). Also according to this writer. those working in the area of primary health care have found that many more operational problems are amenable to a reasonable solution by these heuristic approaches than an optimum solution by mathematical models such as linear programming.

3.2 The design

The design of the approach will be practical. simple and easily understood by non-experts for whom it is intended. It will however follow laid down economic principles, and will also draw inferences from other similar works.

The stages of this study are the following :-

1. Identify indicators for ability and willingness to finance.

2. Formulate some theoretical hypothetical relationships between these indicators and ability and willingness to finance.

3. Define the functional relationships that will show these hypothetical relationships with high reliability and validity.

4. Elucidate all the possible relationships of the indicators. criteria chosen, and ability and willingness to finance.

The research methods to be followed in this study are illustrated in the table 3.1 below.

TABLE 3.1 An illustration of the steps, approaches, and tools of the design

Stages in the process	How	Tools
1. Design quantitative static and dynamic models	* Extract from the literature possible behavioral and health status indicators important in eliciting consumer choice * Identify significant indicators * Modify selected indicators as variables that will be relevant in static and dynamic states * Design methods for calculating WTF and ATF from measurements made * Model equations * Test significance * Remodel	* literature * Experience * Intuition * Logic
2. Design of semi quantitative static model	Modify the above points to suit the design	=do=
3. Design of a multi dimensional criteria	Combine various WTF and ATF values in an index	=do=
4. Design of a community financing scheme model	* Model results of the semi quantitative model * Model a hypothetical scheme	=do=
5. Design of study tools	Identify,modify and use some appropriate population study techniques	=do=
6. Evaluation of the approach	Assume three hypothetical communities with different levels of ATF and WTF	Simulation modelling
7. Design of a screen methodology	* Modify the measurement of the variables in the quantitative static model * Design methods for calculating and interpreting the values of the variables	* Literature * Logic

3.2.1 Design of Quantitative Static and Dynamic Models

This will be done by selecting and modelling appropriate behavioral and health status indicators that are most important in eliciting the consumer choice in case of WTF. This will be done in line with the approach to this study as explained in section 3.1. Indicators affecting ability will also be selected. Modifications in the variables chosen as indicators will be carried out so that they are relevant both in the static and dynamic conditions.

Relevant measurement scales for the variables will be designed, and methods for calculating the values of both WTF and ATF worked out. The model equations will be specified. The tests of significance and model re-specification methods will be included. It is quantitative because its field study tool will be structured questionnaires.

3.2.2 Design of Semi-Quantitative Static Model

It is only static since its for confirmatory purposes at the community level.

Some indicators from the quantitative model will also be used here, but additional factors that interplay at the community level will be included.

It is semi-quantitative because the study tools will be semi-structured questionnaires, observation, personal interviews and focus group discussions. The methodology for coding and analyzing the qualitative data will be designed also.

3.2.3 Design of Multi-dimensional Criteria

It will be an index consisting of ATF and WTF values. The procedure of making an optimum decision about a community's state of preparedness to finance onchocerciasis control with ivermectin will be designed as the index using various combinations of values of ATF and WTF.

3.2.4 Design of a Community Financing Scheme Model

Inferences will be drawn from both the quantitative and semi-quantitative models in this design. It will be a qualitative descriptive model. The interaction of the spatial and socio-economic factors involved will be illustrated and applied.

3.2.5 Defining the criteria to measure the performance of the approach

The ultimate measure of performance is how much the approach can predict correctly the choice of the communities. This can only be confirmed

by having successful community financing schemes in places where it predicted so.

However, in the short-term, the approach will be judged by how consistent the estimates are over many communities, and how the hypotheses are obeyed. It will also be judged by the levels of statistical significance and reliability of the results.

It will also be judged by how practical, easy to use, and acceptable it is to policy makers.

Nevertheless, for the purpose of this thesis, simulation modelling will be used to test the quantitative model of the approach. the performance will be judged by whether the statistical tests were significant or not.

3.2.6 Design of study tools for the approach

Specific study tools that will complement the various designs in the approach will be designed. This is to ensure uniformity in data collection, analysis, and interpretation of results.

3.2.7 Test of the approach and sensitivity analysis

This is by varying the estimates for the indicators of ability and willingness to finance, and observing the effect of these changes on the estimated values. This will be achieved through the use of hypothetical data through simulation. Different levels of ATF and WTF will be assumed for three hypothetical communities.

3.2.8 Design of a Screen Methodology

This will be a sociological shadow image of the econometric models. It will be used as a control/complementary methodology.

3.3 Key words

1. Community financing, 2. Ability to finance, 3. Willingness to finance, 4. Onchocerciasis, 5.Ivermectin.

3.4 Operational definitions

Community financing: means contributions by individuals or community groups to support a full or part of the cost of the health services, and with the control of the contributions resting with the community.

Ability to finance: means that the people have enough resources to finance the provision of basic services as measured by wealth and or income.

Willingness to finance: means that those with enough resources are prepared to use some of the resources to finance health care services.

It is further divided into willingness to pay and willingness to contribute. Thus:

Willingness to pay: means that those with enough resources are prepared to pay for only their private use and benefit.

Willingness to contribute: means that those with enough resources are prepared to voluntarily contribute to a general community fund for use by all.

Low performance community: means that the community financing is not feasible here due to it's low performance in the ability and willingness to finance valuation using the established criteria.

Middle performance community: means that community financing may be feasible here due to it's middle performance in the ability and willingness to finance valuation using the established criteria.

High performance community: means that community financing is feasible here due to it's high performance in the ability and willingness to finance valuation using the established criteria.