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Determinants of Community Based Health Insurance Program Implementation in Ebinat District, Amhara Regional State, Ethiopia

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July, 2022

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A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Science in Development Economics

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DECLARATION

I, the undersigned, certify that the thesis comprises my own original work. In compliance with internationally accepted practices, I have fully acknowledged and referenced all materials used in this work. I understand that non-adherence to the principles of academic honesty and integrity, misrepresentation/fabrication of any idea/data/fact/source will constitute sufficient ground for disciplinary action by the University and can also evoke penal action from the sources which have not been properly cited or acknowledged.

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Approval of Thesis for defense

I hereby certify that I have supervised, read, and evaluated this thesis/ titled "Determinants of Community Based Health Insurance program Implementation in Ebinat District, Amhara Regional State, Ethiopia" by Samuel Azmeraw prepared under my guidance. I recommend the thesis be submitted for oral defense.

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Approval of Thesis for Defense Result

As members of the board of examiners, we examined this thesis entitled "Determinants of Community Based Health Insurance program Implementation in Ebinat District, Amhara Regional State, Ethiopia" by Samuel Azmeraw. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of "Master of Science".

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ACRONYMS AND ABREVATIONS

CBHI	Community Based Health Insurance
CBHIS	Community Based Health Insurance Schemes
EHIA	Ethiopia Health Institution Agency
EU	Expected Utility
FMOH	Federal Minister of Health
HIA	Health Institute Agency
ILO	International Labor Organization
OOP	Out Of Pocket Payment
SHI	Social Health Insurance
SSA	Sub Sahara Africa
UHC	Universal Health Coverage
WHO	World Health Organization

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ABSTRACT

As of literatures, the implementation of a given program is constrained by social, political, demographic and economic factors. But, to understand the extent of the constraints, the current performance of a program and shape future target area by learning from mistakes, well organized study is necessary to be undertaken. Thus, this paper is aimed to study the Determinants of Community Based Health Insurance program implementation in selected rural kebeles of Ebinat woreda in Amhara region adding to the available literatures previously done. Many people's study was very limited to identifying participation factors but, this one also focuses on the implementation of the scheme along with identifying the threats of drop out of participants using component analysis. Thus, the target population in the study includes members and non-members. Binary logistic regression model was used to identify the factors related to the decision to be members along with factor analysis in identifying the issues associated with drop out of the scheme. Questionnaire of mixed nature along with focused group discussion is used and data has been collected from randomly selected households. The performance of the district in the membership into the health scheme has been found to be 65% and 71% in terms of renewal. After the logistic regression, sex of the household head, fatal disease, family size, disability, monthly income of the household (negatively), distance (negatively) and level of awareness(very good category) are found statistically significantly affecting the variation of the membership decision of households. Moreover, the factor analysis showed that both quality service delivery, awareness related and premium related issues are the bottlenecks for the implementation of the scheme. Based on these results, it is concluded that there are supply side and demand side factors affecting both the membership and drop out threats from health insurance scheme. Thus, it is recommended to take actions on statistically significant issues like distance from health center, very good awareness, fatal disease and the like to have better performance.

Key Words: Logistic Regression, Health Insurance, Factor Analysis, Membership

CHAPTER ONE

INTRODUCTION

1.1. Back ground of the Study

World Health Organization declares in the Sustainable Development Goals of Goal 1, 2 and 3 all correspond to reduction of poverty and enhancement of health accessibility that all people in the world shall have to access health care services without financial hazard (World Health Organization, 2019). Many of the developing Worlds' population are still challenged with poor health sector achievement due to less health financing(Garg & Karan, 2009).

A country's economic development is strongly interrelated with the health status of its population. An equitable and efficiency health care system is an important tool of break up the vicious circle of poverty and ill health (Jutting, 2003). Countries use different means of financing the health system in order to provide fair and equitable service to the public health system through general taxation or through the development of social health insurance to generally recognize to be powerful methods to achieving universal coverage with adequate protection for all against health care costs. These schemes intend to respond to the goal of financing in that beneficiaries are asked to pay according to their means of while guaranteeing them the right to health service according to need. In tax fund system the population contributes with taxes where as in social health insurance system household and enterprise generally pay in with contributions based on salary or income (Carrin et.al, 2005).

Community based health insurance (CBHI) has been considered as an intermediate stage ensuring moving away from households direct payment for healthcare services to the forms of prepayment, in change to universal health coverage. Community is considered as an important in this strategy because governments are often facing two problems. First problem is governments in resource limited settings are not able to fund enough money to cover the people

and second collecting premiums or taxes is not easy especially in developing country where many residents do not have regular earned income sources (Hansoo Ko, 2018). This CBHI scheme is targeted to include the larger rural and agricultural people and the people of informal sector in the case of urban plan (FMOH, 2011; Zelelew, 2012).

Ethiopia introduced a range of health care finance reform like revenue retention and utilization. The establishment of private wing in public hospitals had systematized a fee waive system and standardizing the package of exempted service which introduced and expanded health insurance aimed at increasing the availability of resource for health as well as protecting the population from prohibitive user fees or catastrophic spending finance at the time of illness(Ethiopian Health Insurance Agency, 2015).

Taking the general objective of financing its health financing strategy and its health insurance strategy in particular, Ethiopia introduced community based health insurance scheme in selected districts of four regional states in 2010/11. This scheme later after three years, it become expanded into more districts (Ethiopian Health Insurance Agency, 2015). In Ethiopia case, two types of health insurance schemes are being introduced since in 2010; social health insurance (SHI) and community based health insurance. SHI is targeted in 2025 to cover 10.46% of the population but has not yet been started and community based health insurance (CBHI), which is planned to cover about 84% of the population of the nation in to 2025 (Oberländer, 2013; Ministry of Health, 2017).

In Ethiopia, based on the 6th edition of national health accounts, about 33% of the total health care expenditure is official to the out of pocket payment by the households and is the largest proportion of health spending (Ministry of Health, 2015). To expand financial protection to reduce the financial burden that health spending imposes on households and to increase health service utilization, the Ethiopian government implements demand side initiatives called Community-Based Health Insurance (CBHI). The target of Community based health insurance

s on those people living in the rural and informal sector in urban by pooling risks and protects (Seyoum, 2019).

Ethiopia has piloted and is scaling up CBHI for citizens in the agricultural and CBHI informal sectors, estimated to be 85% of the country's population (EHIA, 2015). Community based health insurance aimed to cover 80% of districts enrolling at least 80% of eligible households by 2020 in Ethiopia. But nationally the overall enrolment was 36% in 2017 (Solomon, 2018). Therefore, the number shows low performance and increases drop out members from the schemes due to the fact that rural people are farther to the health posts, low awareness level about the scheme, health related variables and other socio economic variables accruing both in developing and developed countries. But, it was a simple descriptive report of the performance no focusing on what matters such a performance.

Therefore, implementation of community based health insurance schemes are focused on enrolment rates, drop-outs and cost-recovery after a serious illness, but the study wants to examine determinants of implementation of community based health insurance by considering both enrolled members for the decision to identify factors associated with membership and threats to drop out and those who are not members in the scheme to talk about why they don't join the scheme focusing on possible associated factors of socio-demographic characteristics, knowledge and attitude, health service and scheme related factors affecting implementation of community based health insurance based on literature. Here, from both the members and non-members, the researcher wants to identify the key variables affecting membership using the joined and not joined response attained through questionnaire. But, by taking only the members, it is planned to see the issues associated with persistency (threat of drop out).

1.2. Statement of the problem

Greater part of the low and middle income countries are facing increasing difficulties in supporting sufficient funding for health care. The pinch of deteriorating capacity to fund health care program and service has been too severe

especially to the poorest segment of population which in turn have made various stakeholders including international and national level policy makers to recommend a range of suitable remedial measures.

It is also underlined that about 44 Million people worldwide face hazardous health expense while the rest 25 Million people live in unplanned way due to direct payment of health expense. The pilot study on the performance of CBHI scheme for Ethiopia by USAID also stated that the cost needed for membership more specifically the amount of money needed during health service provision is the main factor affecting health service utilization(Ethiopian Health Insurance Agency, 2015).

Since the introduction of pilot community based health insurance in Ethiopia, more than 57 folds of CBHI districts expansion has been done from 13 districts in 2010/11 to 743 districts in 2020. CBHI contributed for the health sector improvement, mobilizes resource and enabled more than 13,544,767 people to get an opportunity for health service (Ethiopia health insurance agency, 2020). Being fascinated by the results of the 13 pilot districts primarily involved in 2010/11, the government expanded the scheme in 161 districts in 2013/14. This shows how fruitful the program is. However, the national CBHI evaluation report identified that regional insurance design features including fee variation, the socio economic and cultural diversity, the extent of community involvement and varied health utilization trends influenced the expansion of CBHI in the country. For example enrollment rate in Amhara region 60% compared to 64%in Addis Ababa and Oromia region 42 percent. (Adane Kebede et.al, 2014)

When observation is made on empirical studies, the most common and recent are willingness to join Community Based Health insurance (Melaku Haile et.al, 2014)and (Adane et.al, 2014); and (Acosta1, 2014), determinants of community-based health insurance implementation in west Gojjam zone (Biks, 2019). On one hand, the above papers are too old to consider the performance and the variables affecting the scheme implementation. On the other hand, all the papers have not

considered the relevance of identifying the factors associated with dropping out from the scheme; rather they analyzed the mere participation into the scheme. The variables discussed in these papers haven't indicated consistency. Once again, the measurement of the variables such as health status is doubtful. For instance, people with chronic disease such as cancer and people with disability may not have the same status and also the factors affecting the two groups of people may not be the same.

Socioeconomic status, quality of health care, lack of benefit from the scheme, lack of trust in scheme management, and lower satisfaction with the scheme services are key factors for community-based health insurance program sustainability. Moreover, good educational attainment, knowing of the scheme, participation in the scheme, and chronic illness experience of member households facilitate renewal decisions(Hussein& Azage, 2021). But, it is theoretical not empirically model supported output. As the objective is to identify the factors associated with implementation of the scheme, the empirical outputs by the above and other authors identified health status, awareness, distance, economic and other factors. Both probability and non-probability sampling has been used together as kebele and district health officials are obtained through key informant interviews.

In a study of the determinants of enrollment in CBHI scheme using binary logistic model in western Ethiopia also stated that Ethiopia depended on foreign aid to finance 50% of health fund and out of pocket payment(OOP) to cover 34% of it. In that study, though income, premium affordability, educational attainment, and awareness are found significant, health status a very crude variable is taken to be significant too without bothering for measurement issues. Similarly, the study is restricted in that it only studies enrollment but not about sustainability issues(Fite et al., 2021).The crude variable is health status. Why crude is that it includes many health issues which has to be dealt independently. For instance, disability issue and chronic illness cases are two health status variables. But, in the above study, it is taken as one variable. It is also difficult to measure health status as one variable but simple to measure chronic disease and disability using dummy

variable measure. The sustainability issue is about the members to stay in the scheme exploiting the benefit. Moreover, the paper used only binary logit to identify participation decision, but now the focus goes beyond by inculcating the issues of dropout treats by members.

But there were no study that documented determinants of community based health insurance implementation among active members and non-members in the study area and there is no sufficient evidence in the district that showed the root causes of members' dropout from CBHI schemes. While the members are used to check the views about staying in the scheme alone, the members and non-members together has been used to identify the variables affecting the decision to participate in the program. The district under consideration has unique characteristics in that some kebeles are very highland residents while others are low land dwellers. On the other hand, it is tried to include new variables and modify the existing variables based on measurement and specific impact indicator variables. Therefore, the study is aimed at knowing factors that affect the determinant of community based health insurance implementation through active members on both concepts of threats and enrollment and non-participants on why they don't join and the study also fill gaps on the roots of CBHI implementation and how the problem possibly has been addressed in the district. The study will try to examine the determinants of implementation of community based health insurance by using cross sectional survey along with time series data to be extracted from the district annual report in Ebinat woreda South Gondar Amhara regional state, Ethiopia.

1.3. Objectives of the study

1.3.1. General objectives

The general objective of the study is to examine determinants of implementation of community based health insurance in Ebinat district of Amhara regional state in Ethiopia.

1.3.2. Specific objectives

- To assess and examine the current performance of the study area in implementing the program.
- To identify the determining variables affecting participation of people in community based health insurance program in the study area.
- To identify the determinants of performance of the program associated with the members to drop out from or persist.
- To examine the trends of enrollment and renewal rates over time in the study area.

1.4. Research Questions

The research asked and answered the following basic questions

- What seems the current performance of the district in implementing the scheme?
- What are the factors affecting enrollment decision
- What are the factors that affect the decision to persist in the scheme
- What seems the trend of growth of enrollment and renewal rates in the district

1.5. Significant of the study

Effective community based health insurance implementation is essential for providing care for the ill and for instituting actions that promote wellness and prevent accidental out-of-pocket expenditure. The study findings would inform policy makers in understanding the implementation of community based health insurance. This would be useful to health insurers in designing innovative systems and interventions aligned to the problems identified. It would also inform them on how to make independent and immediate decisions on resource mobilization subsector resource allocation and spending, and management of arising issues.

The findings also presents opportunities and challenges to the concerned body that determining variables affecting the effectiveness of overall service delivery through health insurance. Therefore, health insurers would determine appropriate mechanisms to finance health insurance schemes sustainably from the large pool

of informal sector workers. Health professionals and other stakeholders would also benefit from the study findings. It also contributes to already existing literature on health insurance in country Ethiopia, thus adding to existing knowledge in health care.

1.6. Limitation of the study

The study has limitations mainly emanated from budget and time constraints. Due to these and other reasons, there is no detailed analysis of interview and focused group discussion at household level. This was limited to interview at government post level.

1.7. Scope of the Study

The study has been conducted in Ebinat district South Gondar Zone of Amhara region. Geographically, the study has been confined to thirty four rural Keble's in the district and each kebele will have community based insurance agents. The study is also bounded in identifying the determinant factors of community based health insurance implementation through factors(only members) such as those socio-demographic factors, health and health related factors, awareness, distance to health facility, affordability of contributions, time of collection of premium and the trust on scheme management and binary logit(both members and non-members).Once again, the study applied factor analysis/principal component analysis to know the factors affecting the members to persist in the scheme. The time and budget allotted for the completion of the paper may be a challenge. But, the possible measure has been taken by going faster than the plan in the department. As urban people are not part of the scheme (mainly civil servants and the rich are excluded), we are not interested in urban areas and government employees. The researcher doesn't use the usual sample size formula of Yamane (1967) as it is old and it is not good for two groups of populations (members and non-members). Rather, proportional percentage method has been used to get numbers for the two groups of participants of the study.

1.8. Organization of the study

The paper is organized into five chapters. The first chapter is all about introduction which includes background of the study, statement of the problem, objectives, hypothesis, and scope of the study and limitation of the study. The next chapter is composed of literature reviews of the theoretical and empirical type. The third chapter again contains the methodology part of the paper. Here, the target population, the sample size, sampling technique, method of data collection, model specification (both theoretical and empirical) is found. Chapter four is all about the data analysis via descriptive and Econometric approaches in detail. Chapter five is the last part of the paper which is composed of conclusion and recommendation. This lasts with references, appendices and annexes.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Review of CBHI Implementation

2.1.1. Definition and Concept of Community Based Health Insurance

Community based health insurance have the potential to provide financial protection for underserved segments within the population minimizing the equity gap and reducing out of pocket spending to increase awareness regarding the value of insurance building self-belief among participants through community control mechanisms and enhancing utilization of the health care systems (Shimeles A, 2012).

In community financing for health is referred to a tool where by household in a community the population in a village district or other geographical area or socio economic groups finance or co-finance the current and capital cost associated with a given set of health services. At the same time they are expected to gain participation in the management of community financing and the institutions of the health services (Carrin et.al, 2005). The word community based health insurance refers to any nonprofit health financing system. It covers any non-profit insurance system that is aimed primarily at the informal sector and formed on the basis of an ethics of mutual aid and the collective pooling of health risks, and in which the members participate in its management and it is a form of voluntary health insurance that in recent years has become widespread in Africa and Asia is community based health insurance sometimes called mutual health insurance, community health funds, community based prepayment schemes, or micro-insurance.

According to (HFG, 2018), report Ethiopia Scales up CBHI, in an old tradition called Idir or kire of community organizations providing financial help to families

for emergencies like funerals but a new form of iddir/ kire nickname edir/kire while alive is gaining traction as the Ethiopia governments pursues its goal of providing universal health coverage that schemes is community based health insurance. Community based health insurance is health insurance that pools member or participants premium payments into a collective fund which is managed by the members and covers basic health care costs at local health centers when a members is ill. The insurance is even accepted at hospitals when a member is referred by the lower level facilitates. Now the community based health insurance scheme helps us to get treated when we get ill rather than waiting until we die to support our funerals, said a farmer in Tehuldere district, Amhara regional state.

These types of health insurance schemes are characterized by voluntary membership and advance premium payment to cover potential medical costs. Members of these CBHI schemes pay premiums on a regular basis, usually when their incomes are high or mainly at harvest time. Such schemes are often initiated with the financial and technical support of NGOs and thereafter the community takes full responsibility for managing and administering the scheme. Local governments may also play a role in supporting and encouraging the efforts of such schemes.. In addition, members participate actively in administration and supervision (Tenkorang D, 2001).

2.1.2. Characteristics of Community Based Health Insurance Scheme

It is commonly agreed that CBHI scheme is considered a risk pooling mechanism which is an attempt to distribute health costs across different households with different household profile. This in turn has the intention to shift resources from rich to poor, the healthy to the ills and then. Within such a framework, the community based health insurance scheme is characterized as follows(Ethiopian Health Insurance Agency, 2015):

- It is dynamic risk pooling by people sharing some common characteristics of ethnic, religious, occupational and other aspects

- Solidarity where membership premium is independent of the health status of the individual
- Participatory decision making and management
- Membership is household based not individual basis to reduce adverse selection
- It is of the type of non-profit
- Voluntary affiliation (Soors et.al, 2010).

The benefit package for the scheme includes all impatient and outpatient health services in all health centers have to woreda level. Moreover, teeth issue, eye glass related and cosmetic issues are exempted from the benefit package. Contribution for the scheme varies across areas which range from Birr 10.5 to birr 15 per month per household. The federal health minister sponsors 25% of the expenses for members, while woreda and regional governments subsidize almost 10% of the members from their own budget (USAID, 2015).

2.1.2.1. Objectives of Community based health Insurance Scheme

The health insurance strategy indicates that the main objective of the scheme is to provide equity access to long lasting quality health service, increase financial protection, and promote social incorporation for most of the poor. This being the general objective of the scheme, the specific objectives can also be specified as follows:

- Promote finance access to the health service
- To enhance the quality of health service delivery
- To boost the habit of resource mobilization in the sector
- To enhance the participation of the community in managing the health sector
- To promote national capacity for policy formulation and implementation and scaling up of the insurance scheme in rural and urban informal sector society(Ethiopian Health Insurance Agency, 2015).

2.1.3. Out of Pocket Payments

Out-of-pocket payments are direct payments made by a patient to a health care provider that is funds are not channeled with any financing intermediary. Consumer or benefiters fees paid directly to public health facilities are a form of out of pocket payment. In addition to it consists of another form of out of pocket payment which is co-payment made by members of health insurance schemes which repayments are also made to private providers by individuals not covered by any of form of health insurance (McIntyre D, 2013).

2.1.3.1. Financial Impact of OOP health expenditure

The CBHI scheme is basically aimed at protecting people from catastrophic health expenditure. Out of pocket health expenditure is said to be catastrophic only when the amount of payment exceed from a certain pre-determined threshold amount of money. Boerma introduced the basics of catastrophic health expenditure along with their thresholds (Boerma et al., 2014).

Table 1: Definition of catastrophic spending and its thresholds

Indicator	Definition	Source of Information
Incidence of catastrophic health expenditure due to OOP payment	Percentage of population with health expenditure more than 10% of total expense.	Estimation of household expenditure Survey
	Percentage of population whose health expense exceed 40% of non-food expense	
Incidence of poverty due to OOP payment	They are below poverty line due to of health expenditure	
Mean positive	The difference of the OOP payment over	

overshoot of catastrophic payment	the threshold.	
Poverty gap due to OOP payment	Expenditure of OOPP impoverished people lay below poverty line	

Source: **(Boerma et al., 2014)**) as mentioned in (Ethiopian Health Insurance Agency, 2015).

2.1.4. Community Based Health Insurance Practice and Challenges

Community based health insurance and prepayment schemes have happening many communities in East and Southern Africa in response to the economic problems that made them unable to pay for health care when they need it (Machaet.al, 2014). According to Stephen also argued that traditional unity organizations exist in a basic form to deal with health related shocks in some parts of Africa have provided the basis for the movement towards Community based health insurance that emerged in response to failure by the state and market to provide such services. Within southwestern Uganda the existence of Engozi societies, to which about 96 percent of the populations belong provided a ready structure for Kisiizi Hospital to work with in establishing a health insurance scheme whose membership would be drawn from these groups.

According to (Ethiopian Health Insurance Agency, 2015) in Ethiopia, the existence of solid community organization, idir or kire which provide help to families for emergencies, like memorial services is the base for a new form of "edir/kire while alive" for the country to assimilate the concept of CBHI in the rural community. Community health insurance covers a wide variety of health insurance arrangements with vast gradient s in terms of ownership, management, membership, and service as well as financial coverage in distinctive settings and designed for different population groups (Soors et.al, 2010).

Another challenge of CBHIs is that they are often highly dependent on external funding from the government and donor agencies. Such schemes tend to cover a relatively small, low-income group of enrollees and thus they do not have a sufficiently large risk pool to cover their operating costs (Anagaw, 2015). Premium payments and local subsidies are usually inadequate to cover the costs of healthcare, since most enrollees are poor and cannot afford high premiums. Also, while community involvement is beneficial to CBHIs, it is sometimes ineffective due to weak management and technical skills of serving members of the community within the CBHI structure (Anagaw, 2015)

2.1.5. Community based Health Insurance in Ethiopian Context

The Ethiopia Government in collaboration with USAID Inc., and CARE Ethiopia launched a pilot CBHI scheme. The aim of the scheme was established with enhancing access to health care and reducing the burden of out-of-pocket (OOP) expenditure. This voluntary health insurance for rural households and urban informal sector workers was rolled out in thirteen districts located in four main regions those are Tigray, Amhara, Oromia, and SNNPR of the country (Abt Diriba A, 2013). As the first time thirteen districts were selected in four major regional states in Ethiopia for implementation of the pilot scheme. The program was to reduce financial barriers and improve access to health services by reducing the burden of OOP expenditure. The pilot program systems covered both outpatient and inpatient health care services in public facilities with the aim of enhancing access to health care. Although the scheme has been introduced by the government it is community based in the sense that the community determines whether or not to join the method and then concerned in scheme management and supervision. In particular, after being exposed to a range of awareness creation activities a general assembly at the village or kebele level decided whether or not to join the scheme a simple majority had to support the decision and then households decide individually whether to enroll in the scheme. In order to decrease the possibility of adverse selection the unit of memberships is the household rather than the individuals and new members can their card to get health care services after waiting for at least for one month (FOMH, 2018).

The health care financing stratagem implemented over the past fifteen years in meeting its objectives. It has provided greater independence to health care facilities and mobilized revenue for facilities, including primary care facilities by reforms such as establishing facility boards retaining user fees outsourcing non clinical services opening private wing in public hospital as an income generating and retaining mechanisms for medical professionals and health facilities and introducing a third part payer for fee waived patients (EHIA, 2015).

2.1.6. Effectiveness of community-based health insurance

Community based health insurance are those with low income who operate in the informal both rural and urban sector and those excluded due to physical or cultural characteristics. They are either sidelined due to these reasons or not able to take advantage of the government health financing plan. The scheme provides them with some level of financial protection. It has shown that use of health services increases amongst member as compared with nonmember. Utilization of health services increased after the introduction of Bamako Initiatives in Benin and Guinea, this was attributed to availability of drugs and improvement in quality of health services brought by community based involvement. Self-employed women's association scheme in India also reported results, as cost of seeking care was significantly higher for non-members compared with insured member (Making et. al, 2006).

2.1.6.1. Revenue collection and community based health insurance

Enrolment in community based health insurance is on voluntary basis, comparing the percentage covered and the target population is a pointer of the general outlook of scheme. On the one hand high prepayment contributions may protect households from catastrophic expenditure and on the other hand the contributions could be expensive for poor households (Baeza Cet.al, 2002).

However prepayment does not depend on households' contributions solely, other sources of contributions may be local government, national or international non-governmental organization (NGOs), and bilateral donors. The very essential in

relation to revenue is the aggregate ratio of prepaid contributions this includes grants or subsidies to health care expenditure. This is a pointer to the accessibility at the point of need and of the level of financial protection that the scheme can offer. The scheme arrangements contribute greatly to the resources available for local health services e.g. primary care, hospital care and drugs (Carrin et.al, 2005).

2.2. Empirical Review

There are literatures in the study area both from Africa and other well experienced countries even though there is inconsistency in the method, variables and results for the same objective. It has shown that use of health services increases amongst member as compared with nonmember. Utilization of health services increased after the introduction of Bamako Initiatives in Benin and Guinea, this was attributed to availability of drugs and improvement in quality of health services brought by community based involvement. Self-employed women's association scheme in India also reported results, as cost of seeking care was significantly higher for non-members compared with insured member (Making et. al, 2006).

A study conducted on Determinants of community health fund membership in Tanzania by utilizing mixed methods revealed that wealth, sex and size of family members in the households determines the community health fund enrolment. Three middle income quintiles were 1-12% more likely to enroll in the community health fund than the poorest and the richest. community health fund member households were more likely to be large (7vs.6 $p<0.001$) and headed by a male (89% versus 79%, $p<0.05$) than uninsured households from the same areas (Macha et al., 2014) and similar studies done in Bangladesh also shows that occupation, health status and household size were significant determinants of health scheme participation. Larger households (5 to 6 household members) were significantly more likely to be enrolled in the cooperative based health insurance membership than household with less than three members; housewife, self-reported poor health statuses were also significantly associated to enrollment in the scheme (Ahmed, 2017). In a study conducted in Ethiopia on Willingness to

join community-based health insurance among rural households of Debub Bench District revealed that, educational status, wealth index and annual incomes were significantly associated with the households' decision in willingness to join community based health insurance scheme. Respondents who had no education were about 3 times more likely to join the scheme than those who completed grade 1–8. Households who were in the highest wealth quintile were more than 4 times more likely to join the scheme than those who were in the second wealth quintile and households who got better annual income were more likely to join the scheme than those who got less (Megersa, 2014).The Study also illustrated that, age had negative associations with the probability of WTJ the CBHI scheme. The younger were 6% more likely to join the scheme than the older. In comparison with heads of the households; spouses were 59% less likely to join the scheme. In comparison to married, the single was 87.7% less likely to join the scheme. Occupationally, housewives were more likely to join the scheme than farmers. Size of the family was positively associated with WTJ decisions of the households. As the number of the household members increase, the probability of WTJ increased by 69% (Megersa, 2014). Educational level of Households Head and SES (expressed in terms of income, expenditure or asset ownership) of household were factors affecting enrolment in CBHI.

The study conducted by (Ramakrishna, 2012)concluded that the main determinants of demand for health insurance are the occupation, income, health expenditure and awareness. Other variables those are the age and education are positively associated with demand for health insurance for health insurance but are not statistically significant.

A study conducted (Geta, 2020), the finding of the study showed that dropout from CBHI in the Manna district was found to be high compared to other study reports and poor perceived quality of the health service failure to provide the promised benefit package and perceived negative attitude of providing towards were the significant contribution determinants of drop out where as members with greater family size relatively to older age and educated household were less likely to dropout and both trust in contracted heath facility and the schemes. Another

study conducted by (Hellina, 2015) also investigated as household size, information, educational status of the household heads and distance from health institution are factors affecting household heads participation in CBHI in kilte Awlaelo district of Tigray Regional State, Ethiopia.

According to a study, 95% of the members and non-members of community based health scheme are well informed about the scheme. The main sources of information about the scheme include neighbors, scheme officials(Ethiopian Health Insurance Agency, 2015).

The study about the determinants of implementation of community based health insurance in Bure town by applying binary logit along with mixed research design collecting by questionnaire come up with the result that health status, service quality, awareness and community solidarity are statistically significant in affecting enrollment of the society. But, it is little significant to discuss the peoples' satisfaction and project's effectiveness in the area as an enrollment paper (Tsega Hagos Mirach et.al, 2019). Once again, the above paper has included health status, a very crude variable which includes disability and chronic illness. Beyond this, the study is too simplistic in that it only identifies the factors of enrollment by using quantitative data. Even though each paper achieved its exclusive objective, many of them are not interesting as they are not comprehensively studying the participation and dropping decision simultaneously.

The other study conducted using multivariate binary logistic regression studied the effect of health insurance for outpatient health care in Southern Ethiopia. There, they obtained that members of the insurance are found to be three times more likely to get outpatient care than those non-members. But, the paper was a very simplistic comparison between member and non-member. Instead, it was better to analyze the factors affecting the members to stay with the scheme along with the measurement issues (Gutema, 2020).

In a study of the determinants of enrollment in CBHI scheme using binary logistic model in western Ethiopia stated that Ethiopia depended on foreign aid to finance

50% of health fund and out of pocket payment(OOP) to cover 34% of it. In that study, though income, premium affordability, educational attainment, and awareness are found significant, health status a very crude variable is taken to be significant too without bothering for measurement issues. Similarly, the study is restricted in that it only studies enrollment but not about the threat of drop out of the members from the scheme (Fite et al., 2021).

According to (Hussien & Azage, 2021) socioeconomic status, quality of health care, lack of benefit from the scheme, lack of trust in scheme management, and lower satisfaction with the scheme services are key factors for community-based health insurance program sustainability. Moreover, good educational attainment, knowing of the scheme, participation in the scheme, and chronic illness experience of member households facilitate renewal decisions. The variables identified are key items for analysis but the author extracted these issues only by review without the application of factor analysis. Other researchers never used factor analysis (factor extraction) as it is very important tool to measure project implementation

The study conducted by Atnafu, Low level of awareness, perception of high amount of premium, poor perception of quality of services and lack of trust are the barriers to join community-based health insurance (Atnafu, 2021). The author used binary logistic regression to identify the factors affecting willingness to join into the scheme. But it is not supported by the application of factor analysis to identify the key factors of threat for drop-out. This study used only logit to identify the factors, rather it was better to categorize the issues of drop out into elements as economic, social or health and other issues.

Factors associated with enrollment into the scheme have been studied by(Chanie & Ewunetie, 2020). In this study, unlike other studies, demographic variables of sex, age, and perception about the scheme are the key factors. But, the study didn't have utilized other socioeconomic variables for the fact that age level of the household head, health status into two different factions are included in this specific study beyond the inclusion of factor items.

In a study conducted in Dera district focusing on dropout rates, 37% drop out rate is observed and the associated factors were knowledge about the scheme, duration of membership and access to health facility, and visit to health center (Ashagrie et al., 2020).The objective was to identify the factors associated with drop out instead of focusing on membership decision using systematic sampling. It was concentrated only on participants. But this study fails to talk about the enrollment rate of members and the associated enrollment indicators. Even the study only used logit model to exhaustively list the factors of dropout. There, Epi Info was used; instead proportion sample size is going to be used.

In a study of enrollment factor determination in Simada Woreda, 89% willingness to enrollment was observed taking chronic disease, social capital, distance, and wealth status are among the variables. But this study has nothing saying about the membership factors and the bottlenecks faced in the members(Yitayew et al., 2020). The study is going to use disability status and chronic illness instead of taking the crude health measure of health status.

In a study by (Engidaw, 2020) concerned on the Determinants of Community Based Health Insurance Implementation in South Gondar Zone, health status, family size, awareness, income level, chronic illness cases are found to be significantly affecting enrollment. Once again, it is the only district in the zone without Asphalt road which restricts investment and other benefits. But, the study fails to account for the challenges faced in the implementation process, on one hand and the threats of drop out in the study area. In this study, too, marital status is taken into discussion. But, in the future paper, as the study is household level, marital status is omitted. Further, Ebinat district was not part of the study as it is different from Fogera, Farta and Gayent in the sense what have been discussed above including the level of infrastructure, weather condition and proximity to the zone capital.

2.2.1. Conceptual frame work of the study

Previous researchers have examined the determinants of enrolment in health insurance at the household level in different area of study. There has been

particular interest in exploring the determinants of enrolment in community based health insurance, because most community based health insurance schemes fail to achieve high coverage rates and therefore understanding the factors affecting enrolment can help to inform strategies for increasing coverage. For the most part, these studies reach concurrence on determinants of community based health insurance implementation and the studies show inconsistencies regarding the determinants that whether or not socioeconomic and health related and schemes related is a significant determinant.

Moreover, there are no studies examining the factors affecting community based health insurance implementation in Ebinat district. Beyond this, many of the literatures emphasized solely on the comparison analysis between being a 5member and not being a member in the scheme instead of having some items about drop out. Previous papers take drop out and participation independently as two different things. In this paper, people who are participating in the scheme and interviewed for participation decision are again concerned for drop out intentions. But this one takes another more concern on analyzing the factors affecting effective implementation of the program by taking data not only from members and non-members but also it goes a step forward by adding more items of economic related, political related and health related variables for the members to identify the factors determining sustainability in the scheme using factor analysis. Once again, the paper wants to take health status indicators of disability and chronic disease instead of taking the crude health status as independent variable unlike other literatures. The timing of premium payment is also added as a concern of the paper in analyzing the decision to drop out or not.

To construct the conceptual framework with the research objectives, scheme membership is the dependent variable for logistic model analysis whereas socio economic and, demography characteristic (Age, Sex, Income level, House-hold size, health service use related factors (Distance of health center), household related factors (Attitude towards CBHI, Awareness/information/, Chronic disease, disability status) and CBHI related factors (Premium

affordable and premium collection time). The relationship can be expressed and shown in figure.

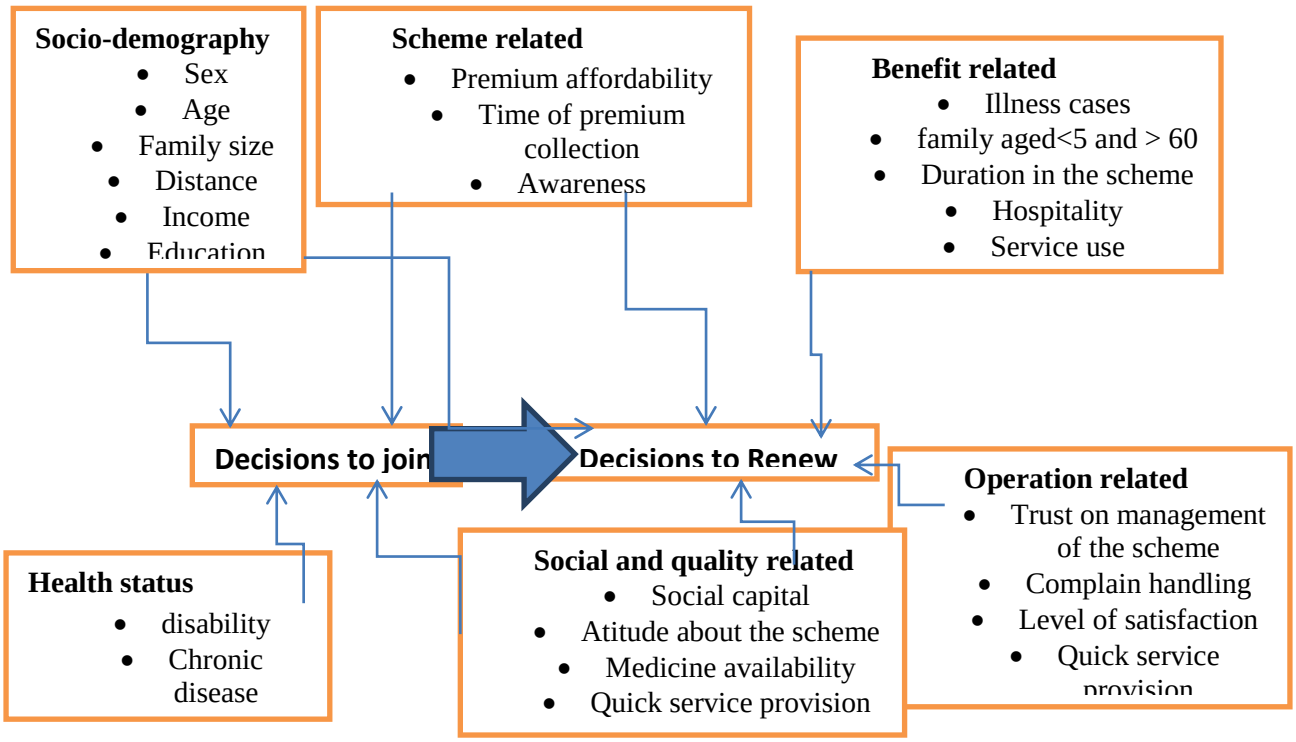


Figure 1:Conceptual framework:(Hussien & Azage, 2021)

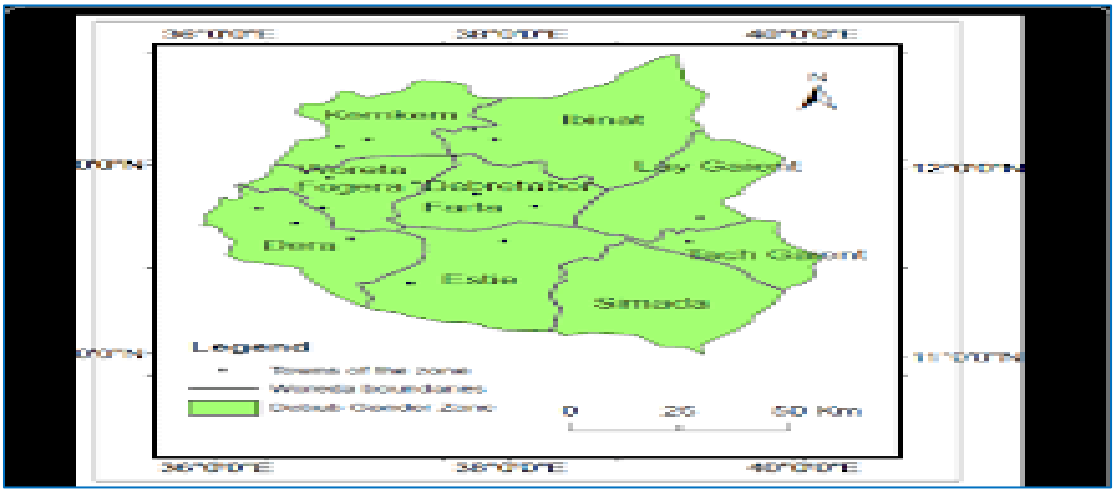
CHAPTER THREE

RESEARCH METHODOLOGY

Chapter three presents research design, site selection and the sampling procedures to be used in the study. It describes how the samples has been determined as well as the tools and techniques of data collection. In addition, the chapter explains how data has been managed and the analysis techniques to be used. The final section explains how ethical issues are handled.

3.1. Description of the study area

The study is conducted in Amhara national regional state, South Gondar Administrative zone in Ebinat District. It is located 128 Km to the Southeastern from regional city Bahir Dar and 154 km east of Gondar city and 660km from the country capital Addis Ababa. It is bounded by in the West Belessa, East Belesa in the North, Libo Kemkem in the South and in the East Meketewa. Based on Ethiopian Population census survey (2007), the total population of Ebinat district is about 233,918. As of Aynalem Adugna (2021), the total population of the district is becoming 235,091. In the district, there is only one primary hospital, 43 extension centers, 12 veterinary centers and 3 private clinics.



Source: Ebinat woreda Rural Land and Environmental protection office (2018)

3.2. Research Design

The research employed both quantitative and qualitative mixed research approaches along with a cross-sectional data design. Descriptive research is adopted to describe key variables as possible behaviors, attitudes, values, characteristics and helping the research to accumulate the critical knowledge and solutions to the determinants of community based health insurance scheme implementation. Moreover, sample survey design has been applied as a social science research basically. Econometric model of binary logit to identify factors of participation decision and factor analysis to deal about the stay-in of the members is used.

3.3. Data Source and Sampling Methods

3.3.1. Population of the study

According to Ebinat Woreda health office (2022), Ebinat district launched CBHI implementation since 2015. Thus, the figures of membership, drop out and other values have been used to measure different aspects via time series data. According to Ebinat Woreda health office (2022), from the total of 12820 household head's participant 5478 members has been extracted in the scheme database and this figure was the basis for estimating the required sample size. The total population of Ebinat District is found to be 233,918 and the projection as of July 2021 is 273, 801(Central Statistical Agency, 2007). However, the study use sample data from the total CBHI 384 household heads.

3.3.2. Sources of Data

Both primary and secondary sources of data have been used to get the required data using different methods. The primary data has been collected from target respondents of CBHI member and non-member households as the scheme is household level. The secondary data on the demographic, socio-economic, household related factors and health related factors are expected to be extracted from Ebinat District health office annual report and other sources such as journals, research reports, and government publications.

3.3.3. Sampling Techniques

Multi-stage sampling method has been applied to select sample respondents. In the first stage, six rural kebeles has been selected purposely based on current enrollment status. More particularly, CBHI current year renewal performance above 50 percent (Worgaja, wemberoch and Taresimba) and the other three kebele below 50 percent performance (Ababikila, Mezard and Wagie) CBHI from 37 kebeles has been taken from the list of the woreda. Simply, renewal rate for the year 2020/21 is recorded in district health office. Then, that record based on percentage of coverage is taken to select the kebeles. The non-members of the scheme are also communicated from the selected kebeles and by omitting the members. The non-members are simply listed in institution level and then systematic sampling technique has been used to get the specific household. In the second stage, the numbers of households that has been included in the study is determined proportionally in accordance with the total number of households in the kebele. Inclusion into the sample requires a household to reside more than 6 months in the district and could communicate during data collection. Beyond this, peoples/households of above 18 years old and working in the rural economy are considered.

3.3.4. Sample Size determination

Cochran formula $n=\frac{t^2pq}{d^2}$; is used to determine sample size where t=1.96, p=proportion of membership (50%) and q= proportion of non-membership (50%), and d=level of precision (5%) (Cochran, 1977), through assumption on performance.

If we assume the ratio between the members and non-members in the district is 1:1, then it is possible to use the above formula taking 50% proportion as follows:

$n=\frac{1.96^2}{0.05^2}(0.5)(0.5)=384$. Thus, we will have 192 members and 192 non-members have been randomly selected based on the list of households' profile of each kebele.

Table 2: Selected sample size each kebele proportionally determined

No	Kebele	Total population household	Participant	Non-participant	Sample for two groups
1	Worgaja	548	274	274	55
2	Wemberoch	834	417	417	84
3	Taresimba	466	233	233	47
4	Ababikila	266	133	133	27
5	Mezard	820	410	410	83
6	Wagie	862	431	431	88
Total		3796	1898	1898	384

Source: Own calculation from Ebinat woreda health office (2022)

3.3.5. Data Collection techniques

The primary data has been collected from a sample of rural people in the district directly through semi-structural interviewer supported, pretested questionnaire which is translated into local language using experts to ensure data clarity and variable inclusion. The questionnaire comprises close ended and open ended questions to fully catch variables of interest. The questionnaire has some variation between the members and non-members. This is basically to get the issues that affect the members to persist or drop-out from the scheme, keeping variables affecting enrollment the same with non-members. This is to say variables of interest for factor analysis are to be parts of the members. The well trained supervisors effectively supervised the process during data collection. The respondent household heads has taken an orientation about the purpose and nature of the questionnaire. These enumerators have been selected on the basis of their experience on data collection and on their close relation with the people and administration of the study area. Beyond this, the qualitative data from kebele and woreda officials about the challenges and opportunities faced during the implementation of the scheme has been obtained through key informant interview.

3.4. Method of data analysis

3.4.1. Descriptive statistics

Descriptive statistics give a clear picture of the characteristics of CBHI implementation. By applying descriptive statistics, one can describe, compare, and contrast different categories of sample units with respect to the desired characteristics. In the study descriptive statistics, such as mean, percentages, frequency has been used, along with econometric models, to analyze the collected data. Moreover, the inferential statistics t-test and $\chi 2$ tests have been tested with respect to the selected variables.

3.4.2. Econometrics Model Analysis

The objective of the study is to analyze determinant of community based health insurance implementation in the case of Ebinat woreda. The dependent variable in this case is a binary response variable which takes the values of "0" or "1" based on the responses measuring the enrollment status of the respondent. The factor analysis method is also to be used to identify the key variables which affect the members' view towards persistence in the scheme. Each item has factor loadings and extraction coefficients to decide on the influence.

3.4.2.1. Empirical Model

The logistic regression model has been estimated to analysis binary choice dependent variable. It is represented in the model by yes/no responses measuring enrollment of the insurance program.

$$\mathbf{Pi} = \mathbf{F}(\mathbf{Yi}, \mathbf{Zi}, \mathbf{Hi}, \mathbf{C},)$$

This log-odds ratio is a linear function of the explanatory variables and we call it logit model. In this case our data is based on household observations and employ the method of maximum likelihood function to estimate the model. To (Gujarati, 2004), in ML estimation procedure, our objective is to maximize the log linear function (LLF) that is to obtain the values of the unknown

The logit distribution function for the participation in CBHI participation is specified as:

$$\boldsymbol{Pi = E(y = \frac{1}{XI}\frac{1}{1 + e-(^{B1+B2Xi)}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 1}$$

$$\mathbf{Pi = \frac{1}{1 + e^{-z}} = \frac{e^{z}}{1 + e^{z}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2}$$

Where:

$$\mathbf{Zi = \beta 1 + \beta 2Xi}$$

Pi- is the probability of being members in CBHI

1-Pi -is the probability of being non-members in CBHI

Therefore, we can write

$$\mathbf{\frac{Pi}{1 - Pi} = \frac{1 + e^{zi}}{1 + e^{-zi}} = e^{z} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3}$$

Now simply $\frac{\mathbf{Pi}}{\mathbf{1-Pi}}$ is the odds ratio

If we take the natural log of the above equation, we obtain

$$\mathbf{Li = \ln\frac{PHi}{1 - PHi}}$$

$$\mathbf{= Zi \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4}$$

$$\mathbf{= \beta 1 + \beta 2Xi}$$

L is the log of the odds ratio, is not only linear in *X*, but also linear in the parameters.

L is called the logit, and hence the name logit model (Gujarati, 2004).

The logit distribution function for the participation in CBHI is specified as: Thus, binary logistic regression model that is going to be employed in the study while the dependent variable is Y and independent one X is:

$$\textbf{logit}\,(\mathbf{Y}) = \ln\frac{\mathbf{1}}{\mathbf{1-pi}} = \mathbf{Zi} = \mathbf{B0} + \mathbf{B1Xi1} + \mathbf{B2Xi2} + \cdots \ldots \ldots \mathbf{BnXn} + \mathbf{Ui}$$

$$\mathbf{Zi} = \mathbf{B0} + \mathbf{B1X1} + \mathbf{B2X2} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \mathbf{BnXn} + \mathbf{Ui}$$

3.4.2.2. Factor Analysis

Factor analysis is the method of data analysis which is useful to identify and categorize bulky variables into groups based on similarity. It is also named as component reduction/factor reduction model, which needs observations to have correlation to each other. It has been widely applicable in many of project implementation and evaluation studies of Economics, engineering and other fields. In the paper, confirmatory factor analysis is going to be used to ensure whether the aforementioned factors of demographic, socioeconomic, and health service related factors by following the required steps.

3.4.2.3. Specification of key Variables

In order to make the estimation of the model more clear and make it easier for the reader to understand, the variables used are discussed below and variable name assigned. Based on (Yitayew et al., 2020) in South Gondar, (Engidaw, 2020), center (Ashagrie et al., 2020) in Dera woreda, and (Atnafu, 2021) Low level of awareness, perception of high amount of premium, poor perception of quality of services and lack of trust are the barriers to join community-based health insurance health status, family size, awareness, income level, chronic illness cases are found to be significantly affecting enrollment.

Dependent variable of the model (CBHI participation):-The dependent variable for logit analysis is binary choice dependent variable. This binary measurement includes the status of membership or not of enrollment of the respondents which attains values 0 for one who is not a member of the scheme or 1 if one is member of a scheme. A variable with such response will utilize binary logistic model of the multivariate (more than one independent variable) type.

Independent variables:-Based on literature reviews the following factors are expected to influence the effectiveness of CBHI scheme.

Age of household head (AGE):-It is a continuous variable defined as the household heads age at the time of the study measured in years.

Sex (SEX): Sex is a dummy variable which explains whether the household leader is male or female and coded in the model by "0" if the household head is female and "1" if household head is male.

Household size (Famsize): It is a continuous variable representing the total number of family members of the household and directly affects the household heads decision to participate in community based health insurance.

Educational status of the household head (EDUSH):-It is a continuous variable defined as the household heads educate in year by three Likert rate (no formal educate, primary educate and secondary Scholl and above) of households.

Average Income(AvY): –It is households living status which is constructed using HH asset data composed of different indicators adapted from modified to local and rural household context. It has been measured by using the information of the ownership on the housing condition like; amount of collected in the last one production year, number of household's live stocks and ownership of farm land.

Number of Illness Cases (Nillcases):-It is one of the proxies of health status and explains the number of illness cases faced by households in the last year.

Awareness (INFOR):-It is a dummy variable which distinguishes between household heads those informed about CBHI scheme and those not informed about the scheme and considered using Likert scale of measurement from 0 for poor awareness to 3 for very good awareness.

Attitudes: is a dummy variable based on the response for positive or negative attitude/view towards the scheme**.** Participants are asked two items with a yes or no response.

Distance from health institution (distahealthins):-Distance from health institution indicates that the time taken to reach the nearest health center from the respondents' home. Chronic disease and disability are also additional concerns as independent variables.

Table 3: Summary of explanatory variables and expected signs

Based on the aforementioned literatures, the following table can be generated:

No	Variables	Category	Description	Sign
1	Age	Continuous	Age in number	-
2	Sex	Dummy	male 1, 0 otherwise	+
3	Educational Status	Categorical	Illiterate, Grade 1-8, Secondary, and above.	+
4	Family size	Continuous	No of people in house	+
5	Disability status	Dummy	1 if disable.	+
6	Awareness level	Categorical	From poor to very good awareness	+
7	Distance	Continuous	In number (km)	_
8	Attitude	Dummy	1 if positive attitude	+
9	Average (M)Income	Continuous	in number	-
10	Fatal disease proxy to chronic disease	Continuous	Dummy if any in the household	+

Decision to Renew

Since the target study area do not have a manipulated data of the households dropped out from the scheme, the researcher didn't model specific independent variable against the decision to drop. Thus, only list of issues/items associated with scheme effectiveness are asked for the respondent to reply. The items have their own groups of scheme related, quality delivery related, and social related or

political related groups. Each item pass through factor/principal component analysis to get how significant the items and groups are in affecting the implementation of the scheme. Thus, factor analysis may show the direction of influence of variables. But, unlike the OLS, it is hardly interpretable in simple terms rather to be compared across groups of items using Alpha value.

Factor analysis is the method of data analysis which is useful to identify and categorize bulky variables into groups based on similarity. It is also named as component reduction/factor reduction model, which needs observations to have correlation to each other. Factor analysis is advantageous in determining the weights of qualitative indicators so as to simplify the process of identifying factors(Zhang & Zhao, 2018).

According to (Niranjan, 2004), there are two types of factor analysis namely principal component analysis and common factor analysis. While the former assumes that all the original data and variables are extracted as well for the factor result, the later considers that the extracted variables are reduced than the original items. Basically, the application of the factor analysis is of the two types: to reduce the number of variables (items) and to determine the nature of structure in relationship between items.

Steps to apply factor analysis

- Collection data and generating correlation matrix
- Extract initial factor solution
- Rotation and Interpretation
- Construction of factor scores

3.5. Diagnostic Test

Validity testis the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure correctly (Bhattacherjee, 2012). A measuring instrument is reliable if it provides consistent results, which in turn does contribute to validity of the instrument. Pre-testing is going to be done first. Finally, the necessary diagnostic test for binary logit has been done. Tests such as multicollinearity, heteroscedasticity and goodness of fit have been

considered. Cronbatch's α value of >0.5 is going to be the threshold for deciding the relevance of items for factor analysis.

3.6. Ethical consideration

Respondents will provide their response voluntarily and we work to maintain the privacy of their response is maintained. The truth of data collection, analysis and reporting of results is also maintained. All research participants that have been included in the study have been appropriately informed about the purpose of the research methods to be used and the demands of the study.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

This chapter has two major contents. Those are data analysis using descriptive and inferential statistics. While the descriptive analysis includes description of the status of respondents from different aspects like demographic, environmental and other issues using descriptive statistics, the inferential statistics include the Econometric part of analyzing relationships and regressions using 97% accuracy of respondents.

4.1.Descriptive Analysis

4.1.1. Demographic characteristics of the respondents

This shows the background information that selected respondents have using various statistic tools. The issues include sex, educational status, age and the like. It is customary to see here that majority of the respondents about whom we talk is participants of the scheme. But, it is relatively close to each other.

Table 4: Proportion of Demographic factors in the sample

Number	Variable	Item	Frequency	Percent	Total percent	Total Frequency
1	Sex	Male	202	53.9	100%	375
		Female	173	46.1		
2	Age	20-35	104	27.7	100%	375
		35-45	181	48.2		
		45-55	72	19.2		
		Above 55	14	3.7		
3	Educational attainment	Illiterate	136	36	100%	375
		Read and write	112	30		
		Primary and secondary	62	16.5		
		Above	65	17.5		
		Total	375	100		
4	Religion	Orthodox	350	93	100%	375
		Muslim	25	7		
		Total	375	100		

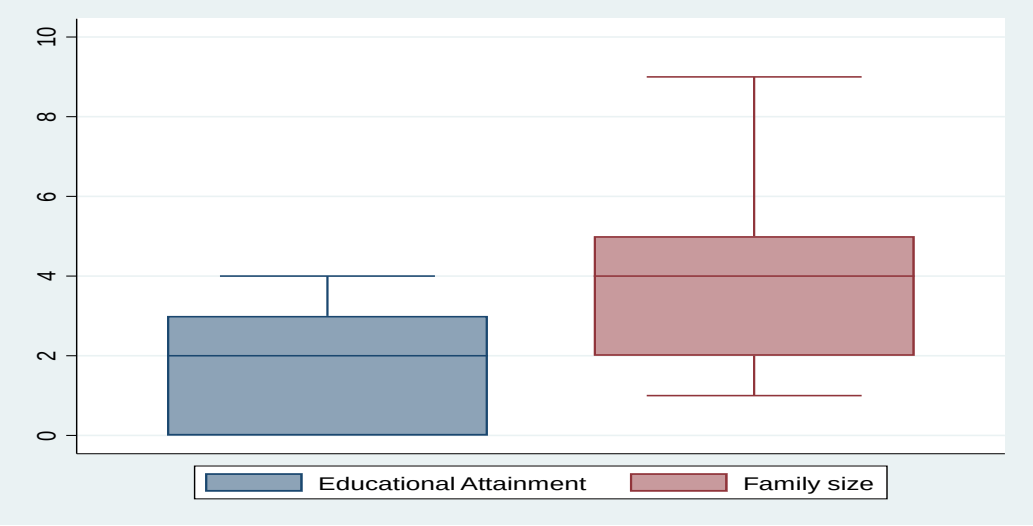
Source: Own Manipulation (2022)

Female respondents have a very significant share in this paper so that the whole analysis can be meaningful and inclusive. Yet, the percentage of male respondents is higher (53%) as compared to female counterparts (47%).

The proportion of the age of the sampled people is also explained by the table above. From the total samples observed, close to 50% of the respondents are aged between 35 and 45 which show the greater share of the young household head in the analysis followed by 27% from 20 to 35 years of age. But, old age people have the smallest share in the sampled respondents.

As the study is rural based, the proportion of the respondents with lower academic involvement is higher which is represented by 36% of illiterate people followed by 30% people who can read and write. Yet, people having academic performance above secondary school constitute 17% of the total respondents. On the other hand, above 90% of the respondents are members of the Ethiopian Orthodox Christianity religion.

Educational attainment and family size explained using box plots



Source: Own manipulation (2022)

Figure 2: Box plot of education and family size

As usual, box plot represents a pictorial way of explaining the distribution of mean and median values of a given variable. From this plot, too, we can understand that the mean value of number of years that a respondent covered in

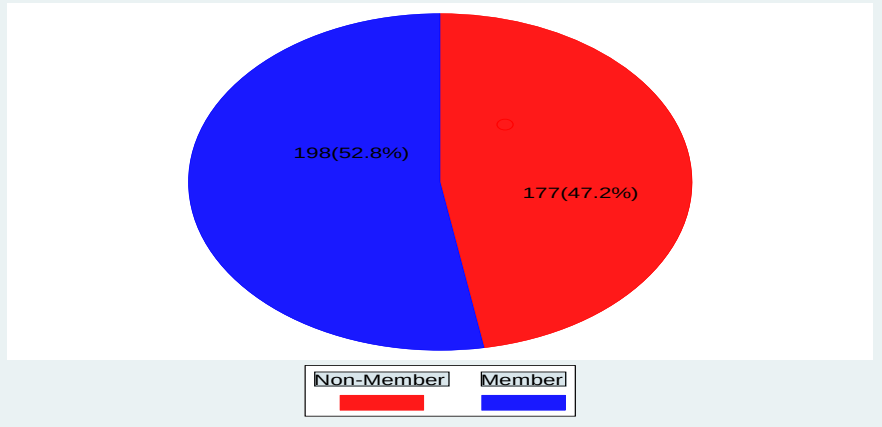
formal education is closer to 1.58 years as the summary table has assured. Moreover, the mean number of people per household is also indicated by the plot that it approximates to 4 which have been realized by the table.

Table 5: Tabulation of samples in each Kebele

Kebele	Initial sample Size	Response Frequency	Percent
Ababikila	27	26	6.93
Mezard	83	81	21.60
Taresimba	47	47	12.53
Wage	88	85	22.67
Wemberoch	84	84	22.40
Worgaja	55	52	13.87
Total	384	375	100.00

Source: Own manipulation (2022)

Most of the respondents replied the necessary requirement of the questions posed-on by the data collector. Very small number of non-response and illegibility is observed in most of the sampled kebeles considered. Response rate is perfect in Wemberoch, Taresimba and Ababikila due to the carefulness actions taken by the data collectors. In Wage, Worgaja and Mezard, there is some slack in the response rate. Still, it is above 90 percent.



Source: Own Stata output (2022)

Figure 3: Pie chart showing proportion of Members and non-members in the sample.

As indicated in the chart, most of the sample respondents (52.8%) are members of the scheme. But, similarly, about 47% of the respondents are not members of the community based health insurance scheme.

4.1.2. Descriptive Statistics of Discrete Variables

Table 6: Tabulation of some discrete variables

Number	Item	Response	Frequency	Percent	Total (%)
1	Disability	Yes	202	54	375(100%)
		No	173	46	
2	Fatal disease	Yes	193	52	375 (100%)
		No	182	48	
3	Participation in local issues	Yes	195	53	375 (100%)
		No	180	47	
4	Premium Affordability	Yes	197	55	375 (100%)
		No	178	45	

Source: Own manipulation (2022)

From table 6, the researcher depicted some health related discrete variables in terms of frequency and percentage. Based on the result, the respondents are composed of 54% disability health problem per household and the rest do not have disability problem. On the other hand, about 52% of the respondents have at least one fatal disease like HIV/AIDS, heart disease, Sugar disease and others per household. When we have a look into the status of active participation of local gov.t and non-government issues, it is found that more than half of them are active at community issues keeping similar proportion (47%) not. All these numbers may have a say on the status of membership of households into community based health insurance scheme. Seeing the perception of household heads on the affordability of premium payments for the scheme, it is observed that great portion (55%) of the respondents agree on the issue that the money payment is not as such expensive. But, similarly equivalent proportion of respondents (45%) replied on the opposite favoring the premium is expensive. Perhaps,

perception about the quantity of premium is one core determinant of participation decision.

Table 7: Tabulation of respondents by Source of Information

Source of Information about the scheme	Frequency	Percent
formal media	112	29.87
local official	135	36.00
Neighbors	128	34.13
Total	375	100.00

Source: Own Manipulation (2022)

As it is clearly indicated above, local official campaigns and awareness creation programs for the most rural people (36%) is their source of information about the scheme. Kebele health and administrative staffs play significant role in adding the community to the scheme via formal and informal trainings especially common in market places, religious institutions and farmer training centers. Local society traditional organizations like Iddir may also serve as source of communication between people about a certain socio-economic issue. Thus, during groups of people communicate each other; they use the different standing of those peoples as an advantage to get information. Especially, when one a kebele staff, Iddir staff and other similar people get each other, they share ideas and happenings. Thus, that is how Neighborhood accounts for 34% of source of information about different aspects of CBHIS.

Table 8: Sample respondents by type of Job

job type	Frequency	Percent	Cum.
Farmer	174	46.4	46.4
Trader	67	17.87	64.27
Laborer	24	6.40	70.67
small enterprise	110	29.33	100
Total	375	100.00	

Source: Own Manipulation (2022)

When respondents are observed from the point of view of their source of livelihood, the majority (46%) are farmers reasonably as the study focused on

rural areas followed by small enterprises residing in small kebele towns. The smallest proportion (6%) is laborers.

4.1.3. **Descriptive Statistics for Continuous Variables**

Table 9: Table of Summary statistics for continuous variables

Variable	Range	Minimum	Maximum	Sum	Mean
Age	52	20	72	14153	37.74
Income	74891	250	75141	2310728	6161.94
Family size	8	1	9	1407	3.75
Distance	32.5	.5	33.0	2736.2	7.297
Educational attainment	4	0	4	594	1.58

Source: Own Manipulation (2022)

From this table, it is plain to observe that the mean incomes of the households who participate in this study are 6161 ETB. On the other hand, the per-house people attributable for each respondent on average are 3 people. The average distance that a household has to cover to get a health center is 7 kilometer keeping in mind there are households who have to cover 33 KM to access a center and there is also minimum of 0.5 km coverage for some households. The mean educational attainment by the respondents is a year and half keeping there are some who don't ever attained any class have to some who attained above secondary education class.

4.2. Performance of the district in implementing the scheme

The district of Ebinat woreda inaugurated the scheme in 2007 E.C. Since that time both the renewal rate and the number of households being member of the scheme have been escalating over time. The growth rate may be different across years.

Table 10: Performance of Membership and Renewal

	Membership			**Renewal**		
year	Plan Member	Actual Member	Percent Member	Plan	Actual	Percent
2007	5200	4620	88%	0	0	0
2008	7480	5875	78%	4620	3482	75%

2009	10760	8754	81%	5420	3715	68%
2010	11010	9441	85%	18376	10412	57%
2011	13065	10277	86%	23656	12587	53%
2012	11461	1130	10%	25127	15801	63%
2013	13421	8512	63%	27342	24875	91%
2014	7999	4289	54%	24904	21917	88%
Sum	80396	52898	65%	129445	92789	71%

Source: Manipulation from Ebinat woreda health (2022)

As can be observed from the table above, the total actual renewals made in all the years equals to 92789, given the total plan of renewal of the woreda in all the years is129445. Thus, the performance of renewal is recorded to be 71% which is good record as compared to the plan. Similarly, the record from membership also approaches to 65% as compared with woreda plan.

The trend of renewal and Membership over time

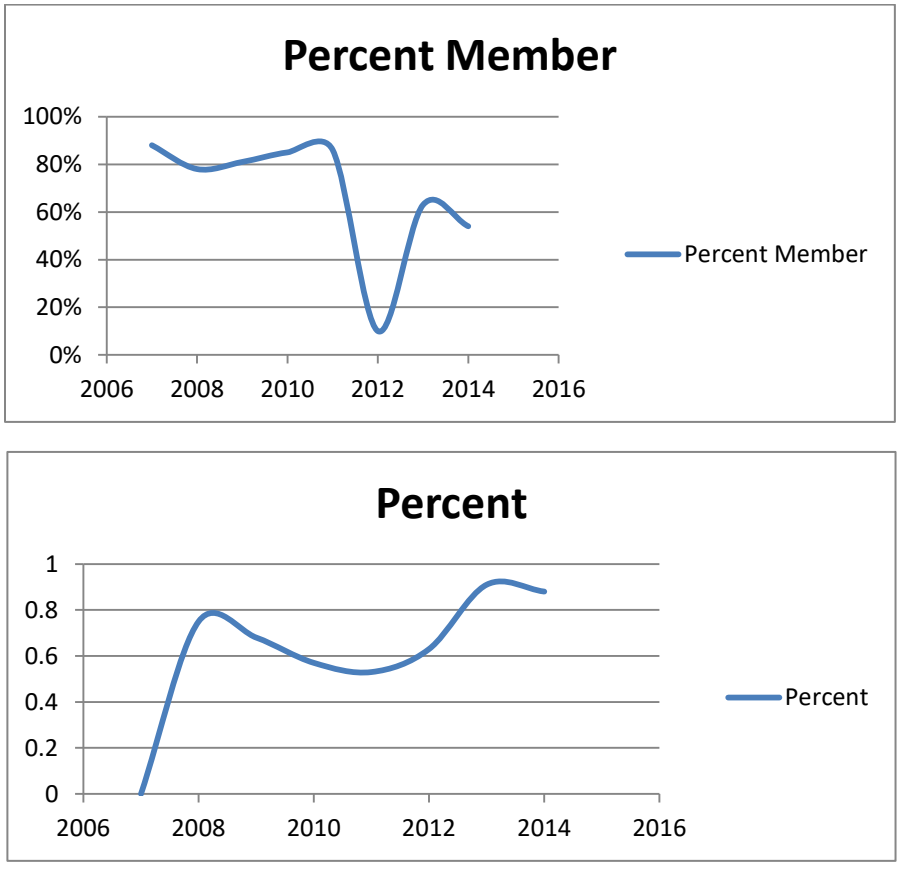


Figure 4: The trend of renewal and Membership over time

From the above graph, we can observe that the renewal rate is increasing consistently over time. Similarly the actual registration of membership is also increasing over the years since inauguration of the program. It is only in 2012 that the actual membership rate is the lowest as compared to other years.

Table 11: T-Test Statistics for Continuous variables

T-Test Statistics				
	Test Value = 0			
	t	Df	Sig. (2-tailed)	Mean Difference
Age	69.997	374	.000	37.741
Income	13.893	374	.000	6161.941
Educational Attainment	21.545	374	.000	1.651
Family size	45.306	374	.000	3.677
Distance	19.158	374	.000	6.5440

Source: Manipulation using SPSS (2022)

This table shows the mean difference regarding continuous variables between the members and non-members. All the continuous variables of age, income, educational attainment, family size and distance from health center are statistically significantly different from zero at 1% level of significance. This implies that there is mean difference in income, age, educational attainment, family size and distance between those members of the scheme and non-members.

Table 12: Chi-Square Test for Continuous Variables

Chi-Square Tests					
Indicator	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	271.171	1	.00		
Continuity Correction	267.762	1	.00		

Likelihood Ratio	320.015	1	.00		
Fisher's Exact Test				.00	.00
Linear-by-Linear Association	270.448	1	.00		

Source: Own SPSS manipulation (2022)

This is the chi-square test for mean difference between members and non-members for discrete variables like sex, disability status, fatal disease, attitude and level of awareness. As each discrete variable is statistically less than 1%, it is possible to conclude that there is clear mean difference between men and women, disabled and non-disabled, people with disability and not, people with good awareness and without. Therefore, there is clear difference and effect of these variants on being membership.

4.3. Determinants of Membership to the scheme

4.3.1. Binary Logistic model Econometric Analysis

As the theoretical literatures along with some of the empirical evidences have forwarded, being a member of Community based health insurance scheme is a function of many other economic, social or household level factors. Following the diagnostic test results, it is observed that there is no multicollinearity problem I the data under consideration as the average value of variance inflation factor(VIF) equals 2.187 (Look in the appendix). Moreover, the heteroscedasticity value also indicated that it is statistically insignificantly different from zero, p>Chi2=0.1017(Look in the appendix). The Hosmer-Lemeshow test value of chi2 (8) = 0.49; Prob > chi2 = 0.4190 from the appendix also shows that the model fits the data well. Hence, there is fine goodness of fit in the logistic regression model.

Thus, the following table shows the Econometric output of binary logistic regression which has been applied basically to identify the significant and insignificant variables which determine households' decision to join the scheme.

Table 13: Table of Binary Logistic Regression

Membership	Coefficient	St. Err.	t-value	p-value	Marginal Effect
Age	-.16	.165	-0.97	.332	-0.011
Sex	5.364**	2.728	1.97	.049	0.367
Income	-0.001**	0	-2.17	.03	-0.001
Disability	4.086**	2.04	2.00	.045	0.280
Fatal disease	2.715*	1.722	1.98	.045	0.186
Awareness		.	.	.	.
Medium	.91	2.304	0.40	.693	0.024
Good	3.753	2.783	1.35	.178	0.400
V. Good	1.902*	2.152	1.88	.077	0.084
Education		.	.	.	.
Read and write	3.922*	2.176	1.80	.071	0.046
Primary	1.389	2.8	0.50	.62	0.118
Secondary	.219	1.965	0.11	.911	0011
Above	7.791	43.438	0.18	.858	0.945
Family size	1.678**	.844	1.99	.047	0.115
Distance	-.847**	.384	-2.20	.028	-.058
Constant	-4.095	3.569	-1.15	.251	

Mean dependent var	0.496	SD dependent var	0.501
Pseudo r-squared	0.952	Number of obs.	375
Chi-square	492.439	Prob > chi2	0.000
Akaike crit. (AIC)	54.624	Bayesian crit. (BIC)	113.448

*** p<.01, ** p<.05, * p<.1

Source: Own Stata output (2022)

When we have a look at the preliminaries of the output, we have the Pseudo-R^2 and p-value which in general give hint about overall significance of all the independent variables together. Though less significant in this case, the Pseudo-R^2 value of 0.94 represents that the improvement of the alternative hypothesis of being a member of this insurance programme in the inclusion of all the independent is 95% explained by the independent variables under consideration. On the other hand, the p>Chi2 represents all the variables are statistically significant in explaining the variation of being a member at 1% level of significance. The improvement of the general model after inclusion of the independent variables is 95%.

Moreover, variables like sex of the household head, income of the household and distance from health center are statistically significant at 5% level of significance. Households headed by males have higher log-odds of being a member of CBHIS as compared to female headed households by 5.3, other thing kept the same. Similarly, a one birr rise in income of the household decreases the log-odds of being member of a health scheme by 0.001, ceterus paribus. This may be due to the intention that more wealthy people prefer to be treated in private health centers or may think that direct payment will give birth to more preferred and safe way of treatment. Unlike Megersa (2014), income level is statistically significantly negatively related here but Family size is found positively significant. As distance increase by a unit of kilometer, the log-odds of being a member of health insurance scheme decreases by an average of 0.84 units, keeping other factors constant. This may be the real case that people farther from health centers will not allow people to be well informed about the working of the scheme and less effective to farther rural areas.

On the other hand, disability, family size and fatal disease are statistically significant at 5% level of significance. This is in conformity with a study in Tigray region (Hellina, 2015) and (Fite et al., 2021). To be more specific, a person having very good level of awareness are higher by 1.9 in log-odds of being member of the scheme as compared to having poor awareness and is significant at 5% level of significance. Generally, those who have very good awareness are significant at 10% level of significance as compared to poor awareness.

A household with at least one disabled person per household have higher log-odds of being a member of a health insurance (4) as compared to household without any disability, other factors being constant. Similarly, when one more child is added to a family, the log-odds of being a member of the health scheme increases by 1.67, other factors being the same. Similarly, households having fatal disease like HIV/AIDS, sugar, diabetes etc. have higher tendency (log-odds of 2.7) to be a member of community based health insurance scheme, other things being the same statistically significant at 10% level of significance. But, issues like age of the household head, educational attainment of the respondent (above secondary

school and read write) and attitude of the respondents are found statistically not affecting the decision of participating in community based health insurance scheme. This implies that young and old people do not have any difference regarding the decision to join the scheme, or they may have equal tendency. On the other hand, educational attainment reading and writing increases the log-odds of being member of a health insurance scheme by 3.9. But, the rest categories of educational attainment remain not affecting the membership decision. It might be the case that rural people' educational attainment is climaxed to reading and writing. The marginal effects also show the addition in value of the explanatory variables on the improvement of the dependent variable. Going from female to males, the rate of change in probability of being member of health scheme is 0.36. Similarly, as income of a household changes by one birr, the rate of change in the probability (likelihood) of being member of the scheme decreases by 0.001, which is less elastic.

4.3.2. Implementation of the scheme Using Factor Analysis

From the above Econometric analysis, we have observed the factors which determine people to be attracted to the scheme or not. It is done based on the idea that it includes both members and non-members of the scheme along with the basic determinant variables. But, it do not show the factors associated with sustainability of the members to go ahead with the program. More formally, the above binary logistic regression does not answer the question of the threats members have to drop out of the scheme. In the case when there is record of people dropped out of the scheme, it was possible to model another binary logit by taking those dropped and not-dropped out from the program and the associated pushing factors of leaving out. In such cases, to identify many of the associated factors of implementation of health insurance scheme, factor analysis (factor reduction) method is used. This factor reduction is aimed at reducing the numerous factors and making into groups so that it will be easier for one to identify different group of economic, health and other variables.

Table 14: Table of Reliability test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.727
Bartlett's Test of Sphericity	Approx. Chi-Square	1088.985
	Df	190
	Sig.	0.000
Cronbatch's Alpha	α=0.008	Items=20

Source: Own SPSS Output (2022)

As is depicted clearly, since KMO is more than 0.6, we have enough sample size so that it is possible to conduct factor reduction analysis to identify different categories of an issue. Moreover, we have statistically significant at 1% level of significance Sphericity (0.000) and again Cronbatch's Alpha value (0.008) shows that the items are interrelated to each other and the internal consistency is fine. All of this statistical figures allow us to perform factor reduction objected at identifying the different groups of issues that determine the implementation of a project/program/scheme.

The component numbers are identified using scree plot as shown below:

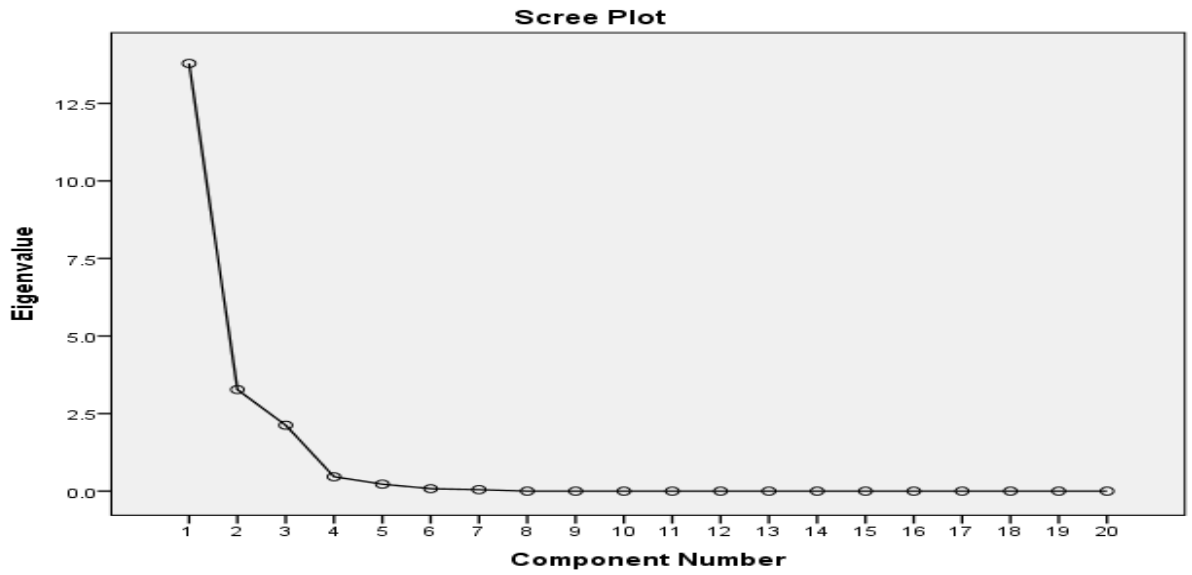


Figure 5: Scatter plot of the factor reduction

Based on the above Scatter plot, all the items considered can be grouped into three groups based on their factor loadings and component matrix values.

Communality

Communalities

	Initial	Extraction
I am well Informed	1.000	.598
Elongated appointment	1.000	.686
no repayment	1.000	.750
no medicine	1.000	.741
Unaffordable	1.000	.549
payment period	1.000	.744
Kebele are working well	1.000	.613
health status	1.000	.726
Quality	1.000	.808
Comm. Leader is trusted	1.000	.584
Comm. Member	1.000	.696
I'm Satisfied	1.000	.745
It is for the rich	1.000	.833
should for poor	1.000	.818
to pool resource	1.000	.614
Protect the poor	1.000	.750
no trust on mgt.	1.000	.737
No the district	1.000	.712
Revenue for gov.t	1.000	.746
Protect household.	1.000	.774

Communalities represent the value of the items explained together. Each extraction represents the unit of the variance that one item explained with respect to other items. Higher extraction levels show higher collinearity and level of interaction between items. For instance, for the first item it can be stated that about 95% of the characteristics of the item is shared commonly for all the respondents.

Component Score Coefficient Matrix

	Component			
	1	2	3	4
I am well Informed	.415	.165	-.050	.157
Elongated appointment	.151	-.526	.000	-.147
no repayment	.195	-.504	-.025	-.229
no medicine	.182	-.513	-.012	-.237
Unaffordable	-.069	.033	.682	.190

payment period	-.019	.271	.675	.340
Kebele are working well	.305	.165	.082	-.205
health status	.188	.047	-.090	.166
Quality	.189	.551	-.096	.182
Comm. Leader is trusted	.435	.216	-.003	.268
Comm. Member	.437	.155	.056	-.226
I'm Satisfied	.477	.026	-.057	-.329
It is for the rich	-.340	.539	.197	.094
should for poor	-.079	-.038	.275	-.799
to pool resource	.288	.026	-.038	-.733
Protect the poor	-.045	.014	.266	-.269
no trust on mgt.	.438	.215	-.025	.144
No the district	.426	.196	.035	-.270
Revenue for gov.t	.188	.247	-.090	.166
Protect household.	-.085	-.133	.229	-.703

Source: Own SPSS output (2022)

Based on the values of coefficients of Component matrix, the items which helped generate such a numerical expression of the variation of CBHIS could be categorized into 4 groups. The grouping is done by observing similarity and higher values of the component coefficients of items. This means though values may be the same, it cannot be taken to group items unless the coefficient value is large enough (>0.3). Based on this, items like I am well informed, community leader can be trusted, community member can be trusted, I am satisfied with the scheme, no trust on management of the scheme and managers have higher and similar coefficient outputs in the first component. And thus, can be grouped as one collection of items. The usual nomenclature for this group may be related with information disbursement and awareness. Then, social capital and awareness related factors will be the name for this group.

The other probable grouping is based on the similar coefficient values of 0.5.The specific items are elongated appointment, no the required medicine, quality of service provision and it is good for the rich have almost similar and enough value. Thus, the most probable name will be one related with quality of service, service quality related factors.

The third grouping comprises items premium is unaffordable, and payment period should be updated. Thus items can be represented by premium related factors. The

last grouping is made by taking items of like it is good to pool resources of the poor, the scheme should be for the poor and it protects households from expenditure which is income/economy related issue. Some items might have been dropped out from the grouping due to their insignificant coefficient figures.

The issues discussed under the opportunities and challenges in implementation are also relevantly proportional with the results found in the factor analysis and Econometric analysis. The problem of attaching the premium payment as equivalent to tax addition by the government is the difficult challenge in collecting money. But overtime, this has been improved. The opportunity here is that the strong social link via associations and religious practices which served as a means to information disbursement. Similarly, the supply side problem of absence of the required medicine and the way the society is being served is also on the table. But, through training, it is being improved over time. Local associations are also prevalent in identifying the threat to drop-out from the scheme. The program needs to be backed up by successive awareness activities to change the preliminary view towards the scheme. Difficult geographical situation and inaccessible areas are the other barriers of the scheme (FGD, 2022)

CHAPTER FIVE
CONCLUSION AND RECOMMENDATION

5.1. Conclusion

In general, the key objective of the paper was to identify issues associated with implementation of community based health insurance scheme in Ebinat district. The issue of implementation comprises three distinct things. The first is answering what are the factors that determine one to be a member of this health scheme. The next issue is identifying the problems or threats related with persisting/sustaining or dropping out of the health insurance scheme. The last is estimating the current performance of the district in succeeding the program. These three points were respectively the specific objectives of this paper. Though less significant in this case, the R2 value of 0.95 represents that the variation of improvement of the general model after inclusion of the independent variables is 95% than the null model. The significance of the overall general model is explained (the probability of rejecting the null model) is significant at 1%.

Moreover, variables like sex of the household head, income of the household and distance from health center are statistically significant at 1% level of significance.

When we have a look at the determinants of enrollment, disability, family size and level of awareness for very good category are statistically significant at different level of significance. To be more specific, a person having very good level of awareness are higher in log-odds of being member of the scheme as compared to having poor awareness and is significant at 5% level of significance. As well, people with disability and chronic disease are making differences towards membership

Thus, the performance of renewal is recorded to be 71% which is good record as compared to the plan. Similarly, the record from membership also approaches to 65% as compared with woreda plan.

Based on the values, items like I am well informed, community leader can be trusted, community member can be trusted, I am satisfied with the scheme, no

trust on management of the scheme and managers have higher and similar coefficient outputs in the first component.

The specific items are elongated appointment, no the required medicine, quality of service provision and it is good for the rich have almost similar and enough value. Thus, the most probable name will be one related with quality of service, service quality related factors.

The third grouping comprises items premium is unaffordable, and payment period should be updated. Thus items can be represented by premium related factors. The last grouping is made by taking items of like it is good to pool resources of the poor, the scheme should be for the poor and it protects households from expenditure which is income/economy related issue.

5.2. Recommendation

Based on the statistical outputs of this study, it is possible to recommend that:

More possible awareness creation and information disbursement activities for promoting the worth of the program are prevalent to boost the possibility of whole inclusion of all the target population into the scheme.

Service quality related issues in each health post/center like hospitality, medicine provision, fast and prioritized service etc. are serious issues especially those elongated appointment, non-accessibility of the ordered medicine in public health centers are the other centers of focus.

Similarly, socio-economic issues like distance, family size, very good awareness and level of educational attainment on the write and read improvement should also be the concerns of a programmer. More specifically, addressing the people in remote areas is expected to promote the task of awareness creation, accessibility, training and experience sharing. Informal education and training services for the rural society would mean many things. On one hand, it is training and on the other hand it will help people understand things from the paper and what is told orally for them without any complex.

Both the demand side and the supply side issues of the scheme need same attention. The way premium collection is addressed by the local administrator should be reviewed and updated. The way people get back the money paid for

specialized hospital service from district office should not be complicated for the layman. Unavailability of the required medicine at the right time may push customers for extra expenditures in search of private clinic.

5.3. Areas for future research

Within the allotted time, budget, methodology adopted, objectives specified, it is impossible to cover each issue of community based health insurance scheme. Specifically, further research should be conducted in the area of studying the impact of this health scheme on poverty reduction by taking the member and non-member. When there is clearly specified record of people dropped-out of the scheme, it should also be done on the why question and comparison analysis be considered. Moreover, geographic difference has been taken as exogenous in this paper, especially between rural and urban areas. Thus, comparison can be done across different woreda-kebele urban areas with rural areas.

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Appendix

Logistic Coefficients

Membership	Coefficient	St. Err.	t-value	p-value	Marginal Effect
Age	-.16	.165	-0.97	.332	-0.011
Sex	5.364**	2.728	1.97	.049	0.367
Income	-0.001**	0	-2.17	.03	-0.001
Disability	4.086**	2.04	2.00	.045	0.280
Fatal disease	2.715*	1.722	1.98	.045	0.186
Awareness		.	.	.	
Medium	.91	2.304	0.40	.693	0.024
Good	3.75	2.783	1.35	.178	0.400
V. Good	1.902*	2.152	1.88	.077	0.084
Education		.	.	.	
Read-write	3.922*	2.176	1.80	.071	0.046
Primary	1.389	2.8	0.50	.62	0.118
Secondary	.219	1.965	0.11	.911	0.011
Above	7.791	43.438	0.18	.858	0.945
Family size	1.678**	.844	1.99	.047	0.115
Distance	-.847**	.384	-2.20	.028	-0.058
Constant	-4.095	3.569	-1.15	.251	

Mean dependent var	0.496	SD dependent var	0.501
Pseudo r-squared	0.952	Number of obs.	375
Chi-square	492.439	Prob > chi2	0.000
Akaike crit. (AIC)	54.624	Bayesian crit. (BIC)	113.448

*** *p<.01*, ** *p<.05*, * *p<.1*

Probit Regression Result

Participation	Coef.	Std.Err.	t-value	p-value
Age	-.097	.084	-1.15	.25
Sex*	2.815	1.475	1.91	.056
Income**	-0.012	0.021	-2.11	.035
Disability** status	2.393	1.17	2.04	.041
Fatal disease	1.332	.899	1.48	.139
Educational		.	.	.
Read and write	2.009	1.23	1.63	.102

Primary	.918	1.566	0.59	.558
Secondary	.265	1.163	0.23	.82
Above	4.602	117.869	0.04	.969
Family size	.876*	.451	1.94	.052
Awareness		.	.	.
Medium	.597	1.315	0.45	.65
Good	2.055	1.633	1.26	.208
V.Good	1.023	1.258	0.81	.416
Distance	-.499**	.221	-2.25	.024
Constant	-1.723	1.648	-1.05	.296
Mean dependent var		0.496		0.501
Pseudo r-squared		0.953		373
Chi-square		492.568		0.000
Akaike crit. (AIC)		54.496		113.319

Hosmer-Lemeshow

Logistic model for Membership, goodness-of-fit test

Group	Prob	Obs_1	Exp_1	Obs_0	Exp_0	Total
1	0.000	0	0	38	38.000	38
2	0.000	0	0	37	37.000	37
3	0.001	0	0	38	38.000	38
4	0.005	0	.1	37	36.900	37
5	0.915	13	13.000	26	26.000	39
6	0.993	35	35.200	1	.8	36
7	0.997	38	37.800	0	.2	38
8	0.998	37	36.900	0	.1	37
9	0.999	38	38.000	0	0	38
10	1.000	37	37.000	0	0	37

Number of observations = 375
number of groups = 10
Hosmer-Lemeshow chi2 (8) = 0.49
Prob > chi2 = 0.4190

Multicollinearity Test

Variance inflation factor for Multicollinearity

	VIF	1/VIF
Age	1.245	.803
Sex	4.034	.248
Income	1.049	.954
Disability status	3.248	.308
Fatal disease	3.292	.304
1LevelofAwareness	1.271	.787
2.LevelofAwareness	1.426	.701

3.Level of Awareness	1.58	.633
1.Educational Attai~t	1.405	.712
2.Educational Attai~t	2.566	.39
3.Educational Attai~t	4.067	.246
4.Educational Attai~t	2.76	.362
Family size	2.38	.42
Distance	2.602	.384
Mean VIF	2.187	.

Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

Ho: Constant variance

Variables: fitted values of Participation

chi2 (1) = 2.68

Prob > chi2 = 0.1017

Chi-Square Tests Membership and Sex

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	320.996	1	.000		
Continuity Correction	317.296	1	.000		
Likelihood Ratio	399.669	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	320.140	1	.000		
N of Valid Cases	375				

Chi-Square Tests Membership and Disability

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	271.073	1	.000		
Continuity Correction	267.667	1	.000		
Likelihood Ratio	319.655	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	270.350	1	.000		
N of Valid Cases	375				

Chi-Square Tests Membership and Chronic disease

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	267.643[a]	1	.000		
Continuity Correction	264.260	1	.000		
Likelihood Ratio	314.559	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	266.929	1	.000		
N of Valid Cases	375				

THESIS QUESTIONNAIRE

Bahir Dar University

Department of Economics

Introduction

Dear respondent, I am a graduate student in Bahir Dar University Msc program specializing in Economics. As a requirement, I am conducting my research related to the implementation of community based health insurance in Ebinat, and hence you are among the samples selected. Thus, I need your open cooperation in giving correct and complete information to have a representative finding on the issue. Finally, I confirm that the information that you share me will be kept confidential and only used for academic purpose. **Thank you**!

Instruction: Use the (X) Mark on what it concerns

I. Background Information

1. Kebele of the respondent ----------
2. Respondent household head' sex a) Female b) Male
3. Age of household head:_____.
4. What is current marital status? a) Single, b) Married c) Divorced, d) Widowed
5. What seems Educational Background the respondent
   a) Illiterate b) Read and write c) Grade 1-8 d) Secondary school e) Preparatory f) Above
6. Religion of the respondent a) Orthodox b) Muslim c) protestant d) Others
7. How many are you in the house (families)? --------
8. What is your occupation as a household?
   1) Farmer 2) Housewife 3) Merchant 4) Daly Labor 5) Student 6) Petty trader 7) Other

II. **Key Variable related Questions**

9. Are you a member of community based health insurance program as a household? A) Yes B) No
10. Average monthly income of the household from different sources is ----------birr.

11. Do you participate in local agricultural development Cooperatives? a)Yes b) No
12. Do you actively participate in kebele/wereda administrative issues? a)Yes b) No
13. Have you ever used the local health facility before? A) Yes B) No
    13.1. What did you use it for?
    A. Treatment B. Vaccination C. Others (please specify) -----
14. What is the nearest conventional health facility nearest to your home?
    a. Health center b. Private hospital c. Govt hospital
15. How about your health status? a) Very poor b) Poor c) good d) very good e) excellent
16. Are there any persons with disability in the household? a) Yes b) No
17. How many number of illness cases in your household in the last 12 months? -------
18. How far is the respondent house from the nearest health center? --------km.
19. Is there any one in your family with chronic disease? A) Yes B) No
20. The payment amount is very large A) Yes B) No
21. If you are informed about the scheme, the source of information is?
    A. From media b) from local officials c) from friends and Neighbors d) from other
22. Do you think that CBHI is good for the poor? A) Yes B) No

Ranking of the scheme from different perspectives

NO	Distribution	Level of agreement				
		very agree	agree	Neutral	Disagree	very disagree
1	CBHI protect household from unaffordable health care expenditure					
2	Premium payment for CBHI sachems are expensive					
3	CBHI means collecting revenue (profit)to the government					
4	I did not have trust in management and administration of CBHI					

5	CBHI is relevant to protect health condition of poor					
6	Health insurance is good to pool the risk of health expenditure within the sick and the healthy					
7	Health insurance should focus to improve health condition of local community					
8	Health insurance is provided only to the town people					
9	I am very satisfied by the scheme					
10	Most of the community member would take advantage of you to achieve personal objective					
11	Most of community leaders can be trusted?					
12	The service provision quality is very high					
13	I have very good health status					
14	Local kebele officials are working well on information and awareness					
15	Premium payment period is not good					
16	Premium amount is beyond ability					
17	We cannot get the required medicine					
18	The money repayment after buying medicine is too laborious					
19	Elongated appointments to get the service					
20	I am well informed about the scheme					

Interview guide (kebele and district stakeholders of community based health insurance)

1. What are the challenges and opportunities of community based health insurance in your view as officials of the area?
2. What measures do you think should be taken to improve the effectiveness of health insurance?
3. What are the frameworks you use to check probable drop out of members?