

Assessing Willingness to pay for Information Delivery among Rural Women in Ghana

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Abstract—This study used rural household survey data collected from 1000 female household heads randomly selected from all the ten administrative regions in Ghana to examine rural women’s willingness to pay for information delivered via three technologies – community radio, private radio, and extension agents. A contingent valuation method was used for the study.

Household expenditures, household education, and membership in community organizations emerged as the principal factors influencing rural women’s willingness to pay for the various information technologies. This point to the need to cast rural empowerment policies and programs within the broader poverty reduction policies of government.

Index Terms—Education, empowerment, extension, income, information communication technology, radio, rural, women

I. INTRODUCTION

Access to information is critical for promoting decision-making and empowerment among the marginalised in society. There is considerable optimism that appropriate policies and programs regarding access to information and women’s empowerment could yield great benefits to a country. In a true sense the idea of empowerment is captured by the participation of rural women in all phases – design, implementation, and evaluation of policies and programs that affect them. Unfortunately, the participation of women in decision-making is the weakest link in the fight against poverty. The GLSS 4 (2000) concluded that women are poorly represented at all levels of decision-making. Within the household, culture and norms designate men as heads of households and therefore the principal decision-makers. Among the various measures to revert this situation is increasing access to information that will enhance women’s decision-making skills. Marclay (2001) indicate that the potential link between knowledge and economic growth leads proponents of ICT for the developing world to argue that improved access to quality information can deliver tangible benefits to even the poorest of the world’s poor. Emerging information and communication technologies (ICTs) have simplified and introduced innovative approaches to information delivery. A key conclusion drawn at the meeting of Ghana National Information Communication Technology Policy and Plan Development Committee and Women’s Organizations was that women could benefit greatly if they were empowered with the information communication

technology. The Committee also agreed that information technology could be an effective tool for the political empowerment of women; education and disseminating information and indigenous knowledge; and strengthening women’s participation in the political process (Ghana, 2003).

ICT policies and programs are expensive to design and implement. Resources are needed for infrastructure and operational purposes. Probably the most daunting task facing policy makers in Ghana is making ICT available to a large segment of the population, especially for educational purposes in the rural areas. Some point to the difficult choice between resource allocation to meet immediate needs such as food, shelter, and health versus investing these resources in computers and ICT infrastructure. This ‘bread or computers’ debate is misplaced because it fails to recognize the symbiotic relationship between ICT/information and rural households’ empowerment to improve their welfare. Given the pressure on the government’s budget, it may be necessary to solicit contributions from rural households, a rather difficult proposition given household income levels in rural areas. Also, it is well established that technology adoption and use depend on the socio-economic characteristics of rural households. Yet the ongoing policy debate concerning ICT in empowering rural households seems tilted to the belief that all Ghana needs is to make ICT available and rural households will jump at the opportunity. A credible and sustainable information delivery programme to empower women in rural Ghana should consider the socio-economic characteristics of households, including a determination of their willingness to pay for alternative ICT technologies. This write-up will therefore attempt to find out how socio-economic characteristics of female household heads influence their willingness to pay for alternative information delivery modes.

II. STUDY AREAS AND RESEARCH PROCEDURES

The population of the study was 1000 female household heads randomly selected from the ten administrative regions of Ghana. Hundred female household heads were selected from each of the ten administrative regions. The data used in this study was based on a contingent valuation survey instrument administered in several villages in Ghana. The survey was divided into two main parts. The first part sought information on basic characteristics of households (age, education, dependents, occupation, expenditures, and membership in community organizations.) The second part consisted of a bidding game for alternative information delivery technologies.

Three main information delivery technologies were considered – community radio, private radio, and extension agents (printed material). The main distinguishing feature of these technologies was price.

The use of radio in rural communication is very common in Sub-Saharan Africa (SSA). The proposed framework considers radio technology a key information delivery instrument given its popularity. Ghana has one of the highest radio ownership rates in SSA (710 per 1,000 people in 2002) compared to an ownership rate of 198 per 1,000 people in the rest of SSA, and 139 per 1,000 people for all low income countries. Ghana's ownership rate represents about a 207 percent increase over a 7-year period 1995-2002 (World Bank, 2003). Following the approach used in several studies, information dissemination through the radio is considered in two contexts - private radio and community radio. There are good reasons to consider radio use in these two contexts. Governments and donors who usually fund the rural education programs may want to reduce the cost of information dissemination by increasing the number of radio listeners usually in a group format. In this context, the amount of contribution to be made by information recipients is correspondingly reduced, making households more willing to pay for the information. An added benefit of a community radio format is the opportunities for listeners to interact and react to information received taking into account the views and opinions of other receivers of information. This interaction enriches the learning process and may be preferred by households.

On the other hand, there may be some rural households that prefer their own private radio to receive information. It is plausible that younger and educated females may want to have the freedom to listen to other radio programs (for example, broadcasts in English), and therefore will be more willing to pay for their own radio instead of paying for a community radio. It is also very likely that educated rural dwellers have higher incomes since they may draw income from both farm and non-farm sources. In this context, they are in a position to pay for their own radio sets to receive information.

In terms of print media, the focus is on extension bulletins and adult education publications. The extension and adult education publications are assumed to be part of a person-to-person information delivery protocol. Information through the print media is assumed to be delivered by extension agents. There is no consideration of newspaper given the currently low level of circulation (about 14 per 1000 population in 2001) compared to about 40 per thousand population for low-income countries for the same period (World Bank, 2003).

The preceding suggests that the study considers information delivery by community radio to be the cheapest since several households contribute to the purchase and maintenance of the system. Extension agents are considered the next cheapest of the three technologies considered because the government pays these agents. The idea is to explore the extent to which a part of the cost of extension information delivery could be shifted to households and lessen the burden on government. The most expensive delivery technology as assumed in the study is the private radio since a household owns it individually and pays full amount for it.

Bidding took the form of a series of specific questions. For example, a respondent was asked whether she would be willing to pay €1,000 per year to use a community radio. If 'yes' the question was posed again with an increase in the amount to €2,000. The process continued until 'No' answered. The final amount to which the respondent answered 'yes' was recorded as the maximum willingness to pay to have the community radio installed in the village. For extension agents, the beginning bid was at €5,000, while for private radios, the beginning point was €10,000. Respondents were also asked to state an amount they will be willing to pay for each of the information delivery technologies.

Field data was collected with the assistance of staff of the Institute of Adult Education. These are people located in the Regional Centers of the Institute, which is established in all the ten Regions of Ghana and are constantly engaged in community programs with the local people. Their residence in the regions, accumulated community research and training experience helped to do rapid field data collection. Data was collected in a face-to-face interview where the interviewer had the opportunity to explain the purpose of the survey and the need to obtain truthful responses from the respondent. The interviewers were quite familiar with the villages and based on their experiences understood the need to interview in a manner that did not impair the integrity of the effort. For example, respondents were cautioned not to discuss their responses with other households. There was broad agreement among field staff that respondents took the process seriously and were willing to offer truthful information to assist in achieving the objectives of the survey.

III. MODEL AND STATISTICAL ESTIMATION

A multiple linear regression relationship was assumed between the dependent variable and the independent variables. The following factors were hypothesized to influence a household's willingness to pay for a selected technology:

A. Age

It was hypothesized that older households will be more willing to pay for community radio systems and extension visits. There were good reasons for this expectation. First, older households are likely to belong to community organizations and hence more comfortable with sharing the media. On the other hand, a young household is also likely to be less involved in community organizations, and would be willing to pay for their own private radio system.

B. Marital Status

The combined income effect and support of married couples is likely to encourage their willingness to pay for private radio information delivery technology. Oftentimes community organization activities are organized along gender lines and there are not much joint community activities between men and women. Thus, information delivery via community radio or extension services would be less attractive to married households. A plausible hypothesis is that married households will be more likely to pay for private radio, and are unlikely to pay for extension information or community radio.

C. Household Size

The household is defined to include all persons who are under the direct responsibility of the female respondent. At a given income level, large households are less likely to pay for private radios given the cost of these radios. Thus, large households will be more willing to pay for community radios and extension services, while small households are more likely to be willing to pay for private radios.

D. Education

Rural females have lower school attendance rates across all regions with the lowest rates recorded in the three northern regions (Northern, Upper West and Upper East). Generally, it is hypothesized that educated households will be willing to pay for any ICT media given the premium on information in decision making. While an illiterate household naturally would depend on the radio and extension visits for information, a literate household has the additional source of information delivered through extension bulletins, and other printed sources.

E. Income

It is difficult to predict the effect of income on the willingness to pay for ICT in rural households. Generally, a positive relationship between income and the willingness to pay for ICT was expected. Households with high incomes tend to spend a smaller proportion of income on food while poorer households spend a higher proportion of income on food. Thus, one would expect the effect of income on ICT to be positive in the relatively richer regions. Furthermore, one would expect households with high incomes to use private radios instead of community radios in receiving information. One could argue that even though poorer households spend a higher proportion of income on food, their interest in obtaining information to ‘kick’ out of poverty may encourage them to be willing to pay for ICT information. In essence, there are no statistically significant differences in households’ willingness to pay across regions. In this sense, it is difficult to predict the exact sign (positive or negative) on the income variable, and the issue is left to empirical determination. An indirect approach was used to obtain measures of income from rural households. Households were asked to list the major sources of income, and then inquired about their expenditure patterns. This was done due to the difficulty in obtaining direct income figures from households and also to capture the effect of transfers. These expenditure amounts were used as proxies for income. Indeed studies of willingness to pay for amenities in rural households have found direct rural income measures to be unreliable and have resorted to proxies to estimate income (Boadu, 1993).

F. Membership in Community Organizations

It was hypothesized that households who belong to a community organization will be willing to pay for information delivered via community radio. Community radio is cheaper than a private radio and more importantly, these households have cultivated the spirit of sharing through their membership in an organization. Table 1

show that rural households make more contribution to community initiatives than do urban households.

TABLE 1.
MISCELLANEOUS EXPENDITURES BY URBAN AND RURAL HOUSEHOLDS

Purpose of expenditure	Mean household expenditure			Estimated total miscellaneous expenditure (billion cedis)
	Urban	Rural	All	
	(cedis)			
Taxes (TV License, property tax etc.)	3,700	1,300	2,200	8.8
Contributions to self-help projects	9,500	10,200	9,900	40.4
Weddings, dowry, funeral, etc.	91,900	62,900	73,500	298.9
Gifts and presents (excluding remittances)	36,700	28,900	31,800	129.3
Other miscellaneous expenditures	21,500	12,500	15,800	64.3
a) Total	163,300	115,800	133,200	541.7

Source: GLSS 4 (Table 9. 27)

The estimated multiple linear regression equation of the relationship between a household’s willingness to pay for a selected information delivery technology and the socio-economic characteristics of the households is as follows:

$$1. (WTP)_{ijt} = a_0 + a_1 (AGE) + a_2 (EDUC) + a_3 (MARS) + a_4 (DEPEND) + a_5 (EXPEND) + a_6 (MEMBR) + U_i$$

where $(WTP)_{ijt}$ is the willingness to pay by a household (i) in region (j) for information delivery technology (t), AGE is age of respondent measured in years, EDUC is the educational level of respondent. The educational level was broken down into two main levels of up to primary and above primary to reflect the low educational levels of women in rural households. MARS is the marital status of respondent, and was measured using a *dummy* variable equal to 1 if respondent is married, and zero otherwise. DEPEND is the number of dependents of respondent, EXPEND is the aggregate of all expenditures reported by the respondent measured in Ghana Cedis, and MEMBR is the membership of respondent in a community organization. Membership was measured as a *dummy* variable, equal to 1 if the respondent belonged to a community organization and zero, otherwise. The term U is a random error term assumed $N(0, \sigma^2)$.

IV. RESULTS

Table 2 below lists the means of selected independent variables for the ten regions in the study, and the mean bids for extension services, community radio, and private radio. Mean household size and expenditures are also provided. Consistent with expectation, mean bids for private radio is highest, followed by mean bids for extension information, followed by community radio.

TABLE 2.
MEANS OF INDEPENDENT VARIABLES COMPARED TO MEANS FROM GLSS

Region	Household Bids in Ghana Cedis			No. of Dependents	Expenditure Survey	Expenditure GLSS 4
	Community Radio	Private Radio	Extension Agent			
Western	3535.5	10404	6182	2.79	5,052,525	4,677,000
Ashanti	3360	22300	8480	3.61	11,054,650	5,008,000
B. Ahafo	3730	24305	10030	1.77	4,180,710	3,544,000
Central	3886	22450	10180	3.74	5,153,510	2,977,000
Eastern	4868	22696	8909	3.33	8,549,222	3,736,000
Gt. Accra	3656	21162	10202	2.83	11,495,487	6,777,000
Northern	3400	21069	9520	4.43	3,335,400	2,837,000
Upper East	3141	21262	8595	3.04	4,059,460	1,793,000
Upper East	3830	26200	9980	5.67	2,070,160	2,462,000
Volta	5200	11190	7320	2.39	6,134,540	4,000,000

Source: Survey and GLSS 4, Table 9.2

Mean expenditure pattern for households also tracks the numbers from GLSS 4. However, in Greater Accra, Eastern, and Central regions, means from the survey are significantly different from the means based on GLSS 4. Since the GLSS 4 is based on 1999 information, it could be that expenditures have changed significantly over the last five years. The means are sufficiently credible to provide a reasonable basis for the survey data analysis.

Equation 1 was estimated for all the regions using the Newey-West estimator. The Newey-West estimation procedure takes into account the problems in using cross-section data to give consistent and efficient estimates. The results of the estimation procedures are presented and discussed below.

Tables 3a, 3b, and 3c present the results of regression analysis using the combined data set from all the ten regions in Ghana, 100 observations for each of the ten regions. Four observations were rejected so the total number of observations is 996 instead of 1000. The overall explanatory power of the model is poor with an R^2 (Coefficient of determination) of 7.5% for the community radio regression, 6.9% for private radio and 8.4% for extension services. The low explanatory power of the models is not fatal, especially given the consistency and statistical significance of several of the critical socio-economic factors that were hypothesized to influence rural women's willingness to pay for selected information delivery technologies.

Table 3a shows that older women, educated above the primary school level, with high expenditure levels, and are members of a community organization are more willing to pay for information delivered via a community radio. With the exception of the income factor that is statistically significant at the 10% level, all the other factors are significant at the 1% and 5% levels. The table also shows that younger women (below age 20) are not willing to pay for information delivered via a community radio. Results for information delivered via private radio (Table 3b) follow the pattern obtained for community radio but it could also be found that married women are willing to pay for information delivered via private radio. This may be due to the fact that married households have higher income (combined income) and could afford the more expensive media for information delivery. This observation is supported by the fact that the estimated

coefficient for expenditures (.00011) in Table 3b is bigger than the estimated coefficient for expenditures (5.09E-06) in Table 3a. Also the expenditure factor in table 3b is highly significant (1% level) compared to the significance level (5%) for the same factor in Table 3a. Table 3c reports the results of estimation for information delivered via extension agents. The pattern observed under the two previous results is observed for information delivery via extension agents. Here again, the principal factors are high education, high expenditures, membership in community organizations, age and marital status. Again, the results show that younger women are not willing to pay for information delivered via extension agents. The only factor that was not found significant in explaining variation in the choice of information media is the number of dependents.

TABLE 3A.
REGRESSION RESULTS FOR HOUSEHOLDS WILLINGNESS TO PAY FOR COMMUNITY RADIO

Variable	Coefficient	t-Statistic
Constant	3017.98	23.08
Age [Up to 20]	-704.62	-5.07
Age [Above 20]	180.84	2.69
Married	38.70	0.43
Dependents	-1.60	-0.10
Educ. [Primary]	-110.71	-0.84
Educ. [Above Primary]	187.74	2.05
Expenditure	5.09E-06	1.62
Membership	316.90	3.54
R-squared	0.075	N = 996

TABLE 3B.
REGRESSION RESULTS FOR HOUSEHOLDS WILLINGNESS TO PAY FOR PRIVATE RADIO

Variable	Coefficient	t-Statistic
Constant	12333.05	8.14
Age [Up to 20]	-5469.63	-2.54
Age [Above 20]	1041.34	0.81
Married	3433.88	2.47
Dependents	348.89	1.40
Educ. [Primary]	1204.46	0.73
Educ. [Above Primary]	5663.57	3.17
Expenditure	0.00011	2.82
Membership	4867.08	3.69
R-squared	0.069	N = 996

TABLE 3C.
REGRESSION RESULTS FOR HOUSEHOLDS WILLINGNESS
TO PAY FOR EXTENSION SERVICE

Variable	Coefficient	t-Statistic
Constant	6707.23	17.23
Age [Up to 20]	-1855.98	-4.57
Age [Above 20]	395.12	1.95
Married	463.64	1.71
Dependents	48.58	1.059
Educ. [Primary]	-27.67	-0.089
Educ. [Above Primary]	473.32	1.82
Expenditure	1.43E-05	2.22
Membership	1298.57	5.20
R-squared	0.084	N = 996

The above results are discussed in detail below based on the socio-economic characteristics of the respondents as it was hypothesised.

A. Age

It was hypothesized that older households will be more willing to pay for community radio systems and extension visits with the reason that older households are likely to belong to community organizations and hence more comfortable with sharing the media. On the other hand, a young household is likely to be less involved in community organizations, and would be willing to pay for their own private radio system. The results (Tables 3a, 3b, 3c) revealed that the older women were willing to pay for information delivered via a community radio or via extension services, and not via private radio. The high significance of the community membership variable (1%) may be explaining why the older population prefers information via community radio or extension services. It is likely that the older population may be members of community organizations. On the flip side younger women were generally not willing to pay for information delivered via any of the suggested technologies.

The age factor is very important in planning an effective program to deliver information to rural households using ICT. This is because even though this factor was not statistically significant, it had the right signs consistent with the hypothesis. In addition the demographic results of the respondents showed that a very high percentage, about 94% of the respondents fell within the active adult stage of 21 – 50 years. These are people who could be described to be in their peak stage of development and production. Their responses could well inform policy on the use of ICT for rural adult education and willingness to pay for such facility and services. And as expressed by Kusi-Nkrumah (2004) adults may have several reasons for continuing learning. The distribution points to a need to examine education program content and the relevance of the information delivered.

B. Marriage

It was hypothesized that married women were likely to be more willing to pay for private radio media. The reason for this assertion was that married women were more confined to private life. Several socio-cultural factors affected their level of participation in public life and interaction with *strangers*. In addition child care, home care and other domestic activities form the priority of (rural) married women's engagements. These limit their

ability to engage in leisure and other empowering socio-economic activities. Limited by these inhibiting factors they were likely to prefer to have their own private radios. Another contributing factor to married women's willingness to pay for private radios could be that married women could have higher income (spouses combined income) and could therefore afford the more expensive media for information delivery.

The results found the marital status of rural women to be statistically significant in explaining the variation in the willingness to pay for information delivered via private radio (1% level; table 3b) and through extension services (10% level; table 3c). Even though the marital status variable had the correct sign under the community radio regression [table 2a], the variable was not statistically significant.

This presents some policy implications. Demographic results of the survey indicated that a majority, almost 70% of the household heads were married. This point to an important socio-cultural factor that must be taken into account in planning information delivery to rural women via ICT. Men occupy a dominant role in Ghanaian society, and this dominance is even more pronounced in rural communities. The roles and status of women/wives and the nature of male - female relationship that exist in these communities put considerable burden on women's time allocation. A more comprehensive rural education program must therefore take into account this dominant position of men. Thus their views, consent and support would be crucial for effective program planning and implementation.

C. Household Size

The household was defined to include all persons who were under the direct responsibility of the female household heads. At a given income level, large households were less likely to pay for private radios given the cost of these radios. Thus, the hypothesis was that large households will be more willing to pay for community radios and extension services, while small households were more likely to be willing to pay for private radios.

The results did not find the number of dependents of rural women to be statistically significant in explaining the variation in households' willingness to pay for information under any of the regressions in the model. The estimates under community radio had the correct negative sign for the number of dependents variable but the variable was woefully statistically insignificant. The observation that could be made from this is that while it is typical of a rural Ghanaian household to report as many as 17 dependents within a household, the survey found the majority of the respondents, 88.3% to have dependents ranging from 0 – 6. A further breaking down showed that over 55% had the total number of their dependents ranging from 0 – 3. What this suggests is that a good number of households may not have the huge financial burden associated with maintaining a large number of dependents. Holistic planning dictates that the government takes a long term view of the empowerment process to include issues related to population planning that on the surface seems like a remote factor in planning information delivery to rural women using ICT.

D. Education

It was hypothesized that educated households will be willing to pay for any ICT media given the premium on information in decision making. While an illiterate household naturally would depend on the radio and extension visits for information, a literate household had the additional source of information delivered through extension bulletins, and other printed sources. The results from the study pointed to household education as one of the principal factors influencing rural women's willingness to pay for the various technologies used in information delivery to women in rural areas. Education was found to be significant at 5% level.

The significance of the education factor supports the need to plan and implement ICT policies for rural empowerment in a holistic context. Education is one of the major components of Ghana's poverty reduction program and the Millennium Development Goals. The survey results show that the government has a major hurdle to clear in its effort to empower rural women using ICT to deliver information. Formal educational attainment appears to be very low among the female rural household heads. The survey showed that about 45% of the household heads had no formal education. Only 1.1% had attained tertiary education. Meanwhile the rural women expressed a strong willingness to pay for information. All education is purposive and designed to achieve an end. Policy and program planners have to undertake specially designed adult education programs to benefit rural women. The results imply that information would have to be delivered to rural households in a language they understand and a medium that they would be comfortable with. The significance of the education variable also points to a need to emphasize 'local' content in designing rural information programs (Dzakpasu 2000; Oduro-Mensah 2001; Siabi-Mensah 2003; Amedzro 2005; Amedzro 2005; and Encartar 2005).

E. Income

It was difficult to predict the effect of income on the willingness to pay for ICT in rural households. Generally, a positive relationship between income and the willingness to pay for ICT was expected. One expected the effect of income on ICT to be positive in the relatively richer regions. Furthermore, one expected households with high incomes to use private radios instead of community radios in receiving information. One could also argue that even though poorer households spend a higher proportion of income on food, their interest in obtaining information to 'kick' out of poverty could encourage them to be willing to pay for ICT information. In essence, there were no statistically significant differences in households' willingness to pay across regions. In this sense, it was difficult to predict the exact sign (positive or negative) on the income variable, and the issue was left to empirical determination.

Like the education variable, the overall results (tables 2a, 3b, 3c) from this study pointed to household expenditures (used as proxy for income) as one of the principal factors influencing rural women's willingness to pay for the various technologies used in information delivery to women in rural areas. The results from the pooled data found income to be significant at 10%. This result points to a need to cast rural empowerment policies and programs within the broader poverty reduction

policies of the government and also within the attainment of the Millennium Development Goals (MDGs). Ghana's primary poverty reduction objective is defined under its *Vision 2020* goal to become a middle-income country by the year 2020. The results show how the attainment of this vision would boost ICT use in delivering information to rural households since income was found to be consistently statistically significant in explaining rural women's willingness to pay for information. There are two important issues to address in the context of the relationship between incomes and ICT use to empower rural women.

First, the relationship between ICT use and income must be seen as bi-directional. While high incomes make it possible for rural women to pay for the information delivery technology of choice, the delivered information, in turn, is intended to empower women to be able to make those decisions that would improve their welfare and incomes. These observations lead to the conclusion that knowledge of the importance of incomes in ICT use in information delivery is not enough. There is also a need to emphasize the learning component that allows rural women to better utilize received information in decision making to further improve their incomes.

A second implication of the statistical significance of the income factor is the need to broaden policies to enhance the many possible sources of income available to rural women. Even though the popular view has been to focus on agriculture as the primary source of raising incomes of rural women, the survey results point to a need to broaden the scope of an income policy in rural areas. The survey results showed that the majority of women (45.8%) reported "trading" as the primary source of income while 23.9% reported "farming" as their primary source of income. About 7.7% reported "dressmaking" as their primary source of income while 4.1%, 2.7%, 2.6% reported "hairdressing," "teaching," and "office work" respectively as the primary source of income. A sizable percentage (11.2%) reported no income source. The distribution of women's sources of income is beginning to put flesh on some of the results obtained in the study. For example, the distribution may help explain why several households were not willing to pay for information delivered by extension agents since the historical mission of these agents are the delivery of "agriculture-related" information. The results may also explain the popularity of private radio because radios may complement such activities as 'hairdressing', 'dressmaking,' 'office work,' and 'trading.' The key is for policy and program planners to better understand the dynamics in the rural sector and to recognize shifts in economic activity that may be counter to the historical pattern of economic activity.

F. Membership in Community Organizations

It was hypothesized that households who belong to community organizations will be willing to pay for information delivered via community radio. Community radio was cheaper than a private radio and more importantly, these households had cultivated the spirit of sharing through their membership in an organization. GLSS 4 data (table 1) showed that rural households make more contribution to community initiatives than do urban households.

Similar to the results on the education and income variables, membership in community organizations also

emerged as a principal factor influencing rural women's willingness to pay for the various technologies used in information delivery to women in rural areas. From the results (tables 2a, b, c) membership in a community organization was found to be significant at 1% level. Women who belong to some form of community organization were more willing to pay for information delivered via the three ICT media examined in the study. The survey showed that slightly more than half (50.3%) of rural women belonged to a community organization and cooperatives. This strong sense of communalism has important policy and program planning implications. For example, the government may want to take advantage of the spirit of communalism and focus on programs that could be delivered to a group as a way to reduce costs and hence be able to extend programs to cover a larger population group. It also means that there is a need to design effective feedback mechanisms since in a group it may not be possible to easily address individual concerns. Information program content may emphasize discussion as a way to sustain group interest. It is important for the government to allow rural organizations to define their own rules to check practices such as 'free riding' and 'shirking.' Attempts by government agents to interfere in group organization could be counterproductive.

V. CONCLUSION

This study used rural household survey data collected from all the ten administrative regions in Ghana to examine rural women's willingness to pay for information delivered via three technologies – community radio, private radio, and extension agents. The primary objective of the study was to identify the critical factors to consider in planning and policy design in using ICT to provide information to empower rural women. The results from this study point to household expenditures (used as proxy for income), household education, and membership in community organizations as the principal factors influencing rural women's willingness to pay for the various technologies used in information delivery to women in rural areas in Ghana. The overriding conclusion that emerges from this study is the need to examine ICT use in information delivery to empower rural women within a 'holistic' context. No single socio-economic factor emerged as the premium in planning policies and programs to use ICTs in information delivery to rural women. Likewise, no single information delivery technology emerged as the main technology to use in delivering information to rural women. Preferences differed.

Despite the lack of consistency in the regression results, several important policy and planning options are suggested by the results from the study. Because of the significance of income in ICT use in rural empowerment, there is a need to cast rural empowerment policies and programs within the broader poverty reduction policies of the government. As shown by the statistical results, the education factor and the importance of community cohesiveness are critical for achieving the development goals of the country.

REFERENCES

- [1] Amedzro, A. D. K. (2005). *Globalization – Non Formal Education and Rural Development*. Accra, Ghana Universities Press.
- [2] Boadu, F.O. (1993). "Contingent Valuation For Household Water In Rural Ghana". *Journal of Economics*, 43(3).
- [3] Dzakupasu, C. C. K. (2000). "Traditional Adult Education in Puberty and Nugbetor". *Ghana Journal of Literacy and Adult Education* 2(1).
- [4] Encartar (2005). *Adult Education*. E. Corley, Microsoft.
- [5] GLSS 4 (2000), *Ghana Living Standards Survey – Report of the Fourth Round*, Ghana Statistical Service
- [6] GPRS (2003), *Ghana Poverty Reduction Strategy 2003 -2005 - An Agenda for Growth and Prosperity*, http://poverty.worldbank.org/files/Ghana_PRSP.pdf [DA: 09/16/04]
- [7] Ghana (2003). *Republic of Ghana – National ICT Policy and Plan Development Committee*. <http://www.ict.gov.gh/html/about.html> ; <http://www.ict.gov.gh/html/women's%20organization.htm> (DA: 11/20/04)
- [8] Kusi-Nkrumah, K (2004). The Social Context of Adult Education in Ghana. In: Asiedu, K. and Adoo-Adeku, K. (Eds). *The Practice of Adult Education in Ghana*, Ghana Universities Press, Accra, Ghana
- [9] Marclay (2001). *Media Development*. Retrieved October 20, 2004 from <http://evelopment.media.mit.edu/SARI/papers/pae.ksg.pdf>
- [10] Oduro-Mensah, D. (2001). "Towards the Promotion of Adult Science Education in Developing Countries". *Legon Journal of Humanities* XII: 148.
- [11] Siabi-Mensah, K. & Aggor, R. A. (2003). *Literacy: A Key to Development*. Accra, Ghana Universities Press.
- [12] World Bank (2003). *Development Data Group*. Retrieved May 11, 2004 from <http://devdata.worldbank.org/>

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