Does Time Use Differentials Contribute to Differences in Poverty levels in Tanzania?

A Case Study of Regions in the Eastern and Northern Zones of Tanzania

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Introduction.

The debate on poverty is currently gaining ground in almost all developed and developing countries in the world. Four decades after independence, Tanzania remains one of the 10 poorest countries in the world (World Bank, 2002) .

Is poverty increasing or decreasing in Tanzania? This question is difficult to answer because in order to have a clear perception one needs to have time series data of the yearly economic indicators. However, at the time of independence in the 1960's Tanzania's income per capita was at the same level with some Asian countries such as Indonesia and Republic of Korea but these countries have managed to increase their income per capita more than

ten fold during the same period (World Bank. 2002). So one can safely say that there has been a slow progress in Tanzania's development. What are the factors behind the increase or decrease in poverty? The World bank (2002) identified the main factors behind the slow progress to be primarily inadequate capital accumulation and productivity growth, poor support for the transformation of agriculture, disrupted progress in building human capital and delayed demographic transition. Are the poverty levels similar in all regions? Could time use differentials be one of the attributes to the differences in zonal or even regional poverty levels?

A criterion for deciding whether an individual is poor is usually based on (1) per capita income (whether his or her income is below the poverty line (2) an index which summarizes the amount of poverty in society (Sen, 1976, Xu and Osberg, 2001). The first criterion is difficult to quantify in an economy like that of Tanzania whereas the second involves human development indicators defining the welfare of the citizens and these can easily be quantified.

Today, Tanzania's income per capita is only 30 percent higher than four decades ago and the average annual growth rate during the period has been a paltry 3.8 per cent. Tanzania Development Vision 2005 is to break with gloomy past and a brighter future. Its ambition is to achieve in a quarter of century what it could not do in four decades. This includes to halve abject poverty, create a base for sustained development of the economy and fashion a diversified, middle income , market economy.

Indeed even though in general terms the country is poor, some regions are poorer than others. The second criterion will be used to establish whether there are differences in zonal/ regional poverty levels and make analysis as to whether the differences are attributed by time use differentials. Whereas some

regions may be self sustaining in terms of food production, others may not. The human indicators that will be used to analyze the differences in poverty levels are individual toilet facilities, clean water availability whether tap water or otherwise, distance from source of clean water, type of the house of the house owned by the household and the individual possessions. Regional attitudes suggest that an individual having a house which is corrugated with iron but built of mud in Mbeya for example may be regarded as a fairly well to do household whereas such a person will be regarded as a poor household in Kilimanjaro for example. Thus differences in perception of poverty do exist by region. Could the regional differences in poverty levels be attributed to time use differentials within the households? This paper is attempting to answer this.

Materials and Methods

Data Sources - Sample Selection

Data on time use by household composition with various household possessions and attributes was the main goal of the NUFU project. Data were collected from sampled areas of Tanzania. Tanzania is a vast country with diversified environment, people with different ethnic and cultural background and different main occupations. Thus sampling procedure was designed to capture these differences. This was so done by stratifying the country into six zones. Table 1 below shows the various research areas

Table 1: Research Areas

Zones	**Locations/Regions**
EAST	Dar es Salaam, Coast, Tanga, Zanzibar, Lindi and Mtwara
CENTRAL	Singida, Dodoma and Morogoro
LAKE	Mwanza, Kagera, and Mara(excluding Tarime and Serengeti)
WESTERN	Tabora, Kigoma and Shinyanga
SOUTHERN HIGHLANDS	Mbeya, Iringa, Rukwa and Ruvuma
NORTH	Kilimanjaro, Arusha, Manyara (including Tarime and Serengeti)

As it can be seen from the table above, the people of the Eastern zone are mainly coastal people who rely mainly on cashew nuts plant and sisal as cash crop and also to a certain extent fruit cultivation. Also most of the Eastern Zone people have adopted Islam as the main religion. When it comes to Southern Highlands Zone, these people are the mainly farmers who grow both cash crops such as coffee, banana and food crops such as maize and beans and so on. Most of the people from these regions are mainly Christians or traditional and so on for the other regions. In all there were 22 locations/regions. Basing on cost considerations and possible within and between urban – rural time use variations by household, 60% of the households were selected from urban households and 40% from rural households. In the case of urban and rural areas, enumeration areas and villages were selected proportionally to the number of urban and rural

households, respectively. A systematic probability proportional to size (PPS) sampling procedure was employed in the selection of the villages in each location/region. Two villages in the case of rural area and two enumeration areas in the case of urban areas were selected from each region. The villages and the enumeration areas were selected from the cartographic listing of the Tanzania 2002 Population and Housing Census. In all there 2980 households. A full list of the selected villages and enumeration areas can be obtained from the final report of the NUFU project.

Information Sought

A full list of the information / data collected should be available from the final report of the NUFU project. For the purpose of this paper information sought that is being used in this paper was the composition of the household, household sex, age, number of children, education level, land acreage, type of crops grown, quality of housing, availability and quality of toilet, type – quality and availability of water including distance from source and possession of various assets such as radio, tv, house type, house roofing, transportation possessions such as car, motorbike, bicycle etc , other possessions such as cattle, chicken, goats, chairs, tables, time use by gender etc.

The various possessions, water sources, quality of housing were used because in this paper they are regarded as a proxy to poverty levels. Time use by gender is used because this is the regarded as one of the causative source of poverty levels.

Comparison of Possession Indicators

CROSS TABS version of the SPSS was used for the analysis of various relationships between zones and possession indicators. The first of such relationship was to test the relationship between zones and type of housing including toilet facilities. Apart from the environmental effects, one would expect a less poor person to have a house with a roof of corrugated and most likely with brick walls. The results are in Table 2(a) and 2(b) below.

Table 2(a): Relationship between Zones and Type of Housing: Roof Type

Zone Count (col pct)	Thatched grass	Corrugated iron and grass	Corrugated iron/ Tiles	Other	Total
East	183	51 (20)	541	3 (10.71)	778
Central	(38.85)	50 (19.60)	(24.52)	20 (71.42)	417
Lake	25 (5.30)	21 (8.23)	322		358
West	82	13 (5.09)	(14.59)		365
S/ Highlands	(17.41)	25 (9.80)	255	2 (7.14)	486
North	59	95 (37.25)	(11.55)	3 (10.71)	556
Total	(12.52)	255 (8.61)	293	28 (.94)	2960
	48		(13.28)		
	(10.19)		411		
	74		(18.63)		
	(15.71)		384		
	471		(17.40)		
	(15.91)		2206		
			(74.52)		

Table 2(b): Chi-Square Tests for Table 2(a)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi- square	246.168	15	.000
Likelihood Ratio	220.635	15	.000
Linear-by-Linear Assoc.	8.498	1	.004
N of valid cases	2960		

From table 2(b), there is a significant relationship between Zones and Type of housing i.e. the roof. As it can be seen from table 2(a) above, out of a sample of 471 households of thatched roof which constitutes 15.91% of the sampled households i.e. 471/2960, the Eastern Zone leads with roofs of thatched grass 38.85% at the same time it leads in the number of houses of tiles/corrugated iron 24.52%. This observation is likely due to Dar es Salaam city which is within Eastern Zone which is likely to have houses of tiles/corrugated iron. As for the big numbers of grass roofs, this is a manifestation of poverty in the rural areas of the Eastern Zone. Noteworthy is roof of other types particularly in Central zone which has 71.42% roof of other types. In Central zone particularly Dodoma Region, roof of mud is a common phenomenon among the poor households as reflected in the analysis. Similar results were obtained for type of walls and availability of toilets.

So, type of housing and toilet availability depend on the zones. Since zones can be quite generalizing, thus probably leading to a grouping effect, it was decided to analyse how the various regions relate to the type of housing. The results are shown in table 3(a) and 3(b) below.

Table 3(a): Relationship between Regions and Type of Housing: Roof Type

Region Count Row pct ( )	Thatched grass	Corrugated iron and grass	Corrugated iron/ Tiles	Other	Total
Dodoma	4 (2.86)		118 (84.29)	18	140 (4.73)
Arusha	25 (17.61)	25 (17.61)	91(64.08)	(12.86)	142 (4.79)
Kilimanjaro	12 (7.5)	53 (33.13)	95 (59.38)	1 (.70)	160 (5.40)
Tanga	36 (24.16)	8 (5.37)	105 (70.47)		149 (5.03)
Morogoro	11 (7.91)	34 (24.46)	94 (67.63)		139 (4.69)
Coast	40 (31.00)	17 (13.18)	72 (55.81)		129 (4.36)
Dar es	15 (12.93)	3 (2.59)	97 (83.62)		116 (3.92)
Salaam	47 (30.92)	4 (2.63)	100 (65.79)	1 (.86)	152 (5.14)
Lindi	39 (32.23)	11 (9.1)	71 (58.68)	1 (.66)	121 (4.09)
Mtwara	28 (15.47)	16 (8.84)	137 (75.7)		181 (6.11)
Ruvuma	5 (4.13)		116 (95.87)		121 (4.09)
Iringa	10 (7.5)	6 (4.5)	116 (86.57)		134 (4.53)
Mbeya	10 (7.19)	16 (11.51)	111(79.86)	2 (1.5)	139 (4.69)
Singida	36 (31.03)	7 (6.03)	73 (62.93)	2 (1.44)	116 (3.92)
Tabora	6 (9.84)	3 (4.92)	52 (85.25)		61 (3.07)
Rukwa	26 (20.31)	6 (4.69)	96 (75)		128 (4.32)
Kigoma	1 (.71)	3 (2.13)	137 (97.16)		141 (4.76)
Shinyanga	13 (15.66)	3 (3.61)	67 (80.72)		83 (2.80)
Kagera	58 (29.44)	15 (7.61)	124 (62.99)		197 (6.65)
Mwanza	20 (16.95)	4 (3.39)	94 (79.66)		118 (3.99)
Mara	12 (8.16)	11 (7.53)	122 (83.56)		146 (4.93)
Manyara	17 (11.56)	10 (6.8)	118 (80.27)	1 (.68)	147 (4.96)
Zanzibar	471	255	2206	2 (1.36)	2960
Total				28	

Table 3(b): Chi-Square Tests for Table 3(a)

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi- square	696.509	63	.000
Likelihood Ratio	546.712	63	.000
Linear-by-Linear Assoc.	4.404	1	.036
N of valid cases	2960		

From the significance level, there is a strong relationship between the region and type of the roof. Similar results were obtained for type of walls and availability of toilets. Looking at the figures from table 3(a), we observe that most of the housing roofs are of the corrugated iron/tiles type as presented in column 3. Looking at the row percentages for example we notice that in the case of Dodoma for example out of the 140 households which is 4.73% of the sampled households (140/2960), the majority of the households had roof of corrugated iron/tiles which was 84.29% (118/140). Similar results were obtained for the other regions (column 3) which shows that most of the roofs fell in the category of corrugated iron/tiles. This suggests that people are not all that poor. However on close examination of the rural vs urban households we notice that most of the houses with thatched roofs are from villages suggesting that there is a substantial difference in housing between rural and urban households as shown in Table 4 below.

Table 4: Relationship between Rural/ Urban Areas and Type of Housing: Roof Type

Count Col pct ( )	Thatched grass	Corrugated iron and grass	Corrugated iron/ Tiles	Other	Total
Enumeration Area (Urban	114 (24.20)	101 (39.60)	1558 (70.62)	9 (32.14)	1782 (60.20)
Village	357 (75.79)	154 (60.39)	648 (29.37)	19 (67.85)	1178 (39.79)
Total	471 (15.91)	255 (8.61)	2206 (74.52)	28 (.94)	2960 (100)

We notice that even at the level of type of housing roof, there is a clear distinction between a rural and an urban household. We notice that out of a sample of thatched roof which is 15.91% (471/2960) of the total sampled households, 75.75% of the thatched roofs were from the villages/rural whereas in the case of urban areas it was 24.25% . As for the roofs of corrugated iron/ tiles out of a sample of 2206 of such roofs from 2960 households which is 74.52% proportion of the households, 70.62% of roofs of corrugated iron were from urban areas whereas 29.37% were from villages/rural areas. That is to say poverty levels are not the same between rural and urban households. That being the case it was decided to make an in depth analysis of regions in two selected zones and to show poverty can be explained partly by time use differentials. The zones selected were Eastern and Northern zones. These zones were chosen because the inhabitants of the regions comprising these zones are culturally and economically diametrically opposite.

Determination of Poverty Index

The principal component analysis (PCA) was used to construct possession index that would allow the determination of the poverty status of the household. The first stage was to include all possessions and check the extent at which the first principal component explains the variation as shown in Tables 5(a), 5(b), 5(c) below.

Table 5(a): Index Construction by principal component:

Communalities

	Initial	Extraction
Water near or far	1.000	.848
Where do you fetch drinking water	1.000	.424
Floor type	1.000	.686
Wall type	1.000	.667
Water distance in km	1.000	.856
Any electricity	1.000	.617
Roof type	1.000	.609
Toilet type	1.000	.425
Possession of fridge	1.000	.615
Possession of motor bicycle	1.000	.642
Possession of car/lorry or tractor	1.000	.590
Does household listen to radio	1.000	.653
Possession of TV	1.000	.700
Possession of sewing machine	1.000	.455
Possession of bicycle	1.000	.440
Possession of radio	1.000	.702
Possession of chairs/table	1.000	.475
Possession of cattle/goats/sheep	1.000	.581
Possession of chicken	1.000	.559

Extraction Method: Principal Component Analysis

When all possessions or proxies to the well being of a household are included in the construction of poverty index, the first principal component which is

used in the construction of poverty index explains 23.357 of the variation. Then, there arises a need to choose a best combination of possessions that maximizes the variation explained by the first principal component in relation to other principal components and the importance of the asset possessed. By taking a linear combination of the principal components, the combination of possessions that maximize the variation of the first component are water near or far, roof type, floor type, wall type and toilet type. Performing factor analysis of this combination using SPSS yields Tables 6(a) and 6(b) respectively.

Table 6(a): Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.537	50.738	50.738	2.537	50.738	50.738
2	.908	18.157	68.895	.908	18.157	68.895
3	.801	16.015	84.910	.801	16.015	84.910
4	.461	9.226	94.136			
5	.293	5.864	100.000			

Extraction Method: Principal Component Analysis.

Table 6(b): Component Matrix[a]

	Component		
	1	2	3
roof type	.762	-.153	-.356
floor type	.865	-.154	-.113
water near or far	.384	.914	-.128
wall type	.858	-.150	-4.52E-02
toilet type	.569	4.829E-02	.802

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

The combination for this possessions yields a first principal component which explains about 51 per cent of the total variation. This crude poverty index can equally be called factor score for each household.

The refined poverty index is based on the formula by Filmer and Pritchett(1998)

$$A_j = \sum_n F_i\{ (a_{ji} - a_i)/s_i)\}$$

Where F_i is the factor score for a household with possession i, a_{ji} is the j^{th} household's value for the possession i, and a_i and s_i the mean and standard deviation of possession i variable over the regions and n is the number of regions. To avoid subjectivity, cluster analysis techniques as described by Johnson and Wichern(1992) were employed to create three categories of poverty status based on the indices scored by each household. These categories; extremely poor, less poor and the rich were then used as response variables in this study. The extremely poor live in low quality dwelling with hardly no walls, thatched roofs, lack of access to clean and safe water, open pit latrine or no toilet and so on. The less poor live in house with corrugated roofing but of mud /wooden walls , have radio, do not have a motor cycle or car, have open pit latrine. There is a member of the household with some skilled work. The rich have a motor cycle or car, have houses of brick walls with a roof of corrugated iron, have access to clean water, have a fridge, etc. There is also a member of the family with secondary education and above.

Value of Time and hence Productivity

If we assume that poverty level is determined to a certain extent by household productivity, there is a need to assess the economic contribution of the various activities to the households productivity. This was done by calculating time spent by the various members of the household in doing these activities. The assumption was that a household whose members were spending most of their times on economically viable activities was expected to be better off than the one whose members spent their time on idle activities. In order to assess the contribution of time, the various activities were coded 'subjectively' at three levels. If the activity was viewed to be fully productive and hence economically viable, it was given value 1. An activity which was regarded as not fully productive and hence less economically viable was given value 0.5 and an activity that was regarded as not productive at all was given value 0. Table 7 below gives the codes for the activities under study.

Table 7: Coded Values given to various activities

Activity	Value	Activity	Value
Waking up and brushing teeth	0	Taking a bath	0
Cleaning	1	Rearing chicken	1
Tea	0	Fetching fire wood	1
Farm work	1	Working	1
Home side works	0.5	Feeding animals	1
Food	0	(mifugo)	0
Relaxation	0	Listening to radio	1
Gardening	1	Making baskets	0.5
Sleeping	0	(kusuka)	1
Visiting places (matembezi)	0	Praying	1
Discussions (maongezi)	0	Ujenzi (fundi)	0.5
Fetching water	1	Kuchuja pombe	1
Preparation of stew (Kutayarisha	1	Washing utensils	0
mboga)	0.5	Business	1
Cooking food	1	Recreation in clubs	0
Washing clothes	0.5	Cutting grass (kufyeka)	1
Preparation of children for school	0.5	Funeral attendance	1
Caring children to sleep	0.5	Kuli (kubeba mzigo)	1
Pastorial work (Mchungaji	0	Reading (kusoma)	1
kanisani)		Driver	
Recreational		Security work	

In order to capture for the differences in the contribution of households welfare by gender, total time spent by the various members by gender were

computed on the basis of the available data. This was done so that an analysis could be made to determine the contribution to the households economy in terms of gender time use and indeed to assess if this might be one of the factors contributing to the differences in the levels of development by regions.

Contribution of Time Use to Productivity

Let x_1 be daily total time spent by a person in doing full productive activities, x_2 be daily total time spent by the same person doing half productive activities and x_3 be daily total time spent by the same person doing non productive activities.

Total time in productivity = $\sum_i x_i$. In fact one could give weights to certain activities so as to show their relative importance but for simplicity values given in table 7 were adhered to. For example values given to washing utensils is 0.5, praying is 0.5 and cleaning is 1. These values are subjective in that I regard cleaning to be more involving whereas washing utensils can even be done by children. Praying is given the value of 0.5 to show that it is not all that important in the contribution to productivity.

Total time in productivity computations were done for the household head, the spouse, and the two selected children. Total time in productivity was disaggregated in three categories. Total for fully productive activities, total for half productive activities and total for non productive activities. All these were gender based.

The Analysis

CROSSTABS analysis was performed to show how the various regions compare in terms of poverty by the use of poverty levels. Table 8 below depicts the information.

Table 8: Relationship between Poverty index and Region

Region Count Col pct ( )	Poverty level			Total
	1	2	3	
Arusha	39 (27.46)	61 (35.92)	52 (36.62)	142
Kilimanjaro	36 (22.18)	72 (45.57)	50 (31.65)	158
Tanga	54 (37.16)	44 (30.77)	45 (31.47)	143
Coast	22 (20.56)	26 (24.3)	59 (55.14)	107
Dar es Salaam	35 (33.65)	50 (48.08)	19 (18.27)	104
Lindi	40 (33.61)	31 (26.05)	48 (40.34)	119
Mtwara	8 (6.67)	58 (48.33)	54 (45)	120
Manyara	25 (17.12)	93 (63.7)	28 (19.18)	146
Zanzibar	35 (25.93)	66 (48.8)	34 (25.18)	135
Total	294 (25.04)	491 (41.82)	389 (33.130)	1174

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	119.973[a]	16	.000
Likelihood Ratio	125.663	16	.000
Linear-by-Linear Association	2.040	1	.153
N of Valid Cases	1174		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 26.04.

From the significance level displayed in the table above, there is strong relationship between region and level of poverty. The majority of people are at level 2 showing that people are not all that poor i.e they are less poor from our definition . Notice that samples for some regions were slightly reduced for lack of poverty index. For example in the case of Kilimanjaro which had 160 samples earlier has had its sample reduced by 2 to 158.

Mapping of the Poverty Measure per Region

Poverty measure by region was constructed by deducting percentages in column 3 from percentages in column 1. Map 1 is a map of poverty measure. (Insert pdf file from Acrobat Reader Adobe called Poverty Akarro)

Multiple tests on Gender Time Use

Assuming that differences to poverty level is related to various levels of gender time use factors there arises a need to make various multiple tests of time use factors. The time use factors considered are Total productive time by household head, spouse, and the first two elder children, Total half productive time by the same persons as for total productive time and non productive time by the same persons.

Table 9:Chi-Square Tests for Spouse

Regio		Value	df	Asymp. (2-
Arusha	Pearson Chi-	92.10 [a]	78	.131
	Likelihood	106.83	78	.017
	Linear-by-Associatio	4.087	1	.043
	N of Valid	131		
Kilimanjar	Pearson Chi-	93.43 [b]	94	.497
	Likelihood	104.61	94	.213
	Linear-by-Associatio	1.130	1	.288
	N of Valid	153		
Tang	Pearson Chi-	129.02 [c]	104	.049
	Likelihood	146.68	104	.004
	Linear-by-Associatio	.012	1	.914
	N of Valid	131		
Coast	Pearson Chi-	96.53 [d]	84	.165
	Likelihood	104.43	84	.065
	Linear-by-Associatio	.545	1	.460
	N of Valid	94		
Dar es	Pearson Chi-	67.69 [e]	64	.352
	Likelihood	78.25	64	.108
	Linear-by-Associatio	1.392	1	.238
	N of Valid	87		
Lindi	Pearson Chi-	96.66 [f]	86	.203
	Likelihood	108.77	86	.049
	Linear-by-Associatio	.867	1	.352
	N of Valid	113		
Mtwara	Pearson Chi-	113.89 [g]	82	.011
	Likelihood	84.95	82	.390
	Linear-by-Associatio	3.049	1	.081
	N of Valid	104		
Manyar	Pearson Chi-	66.47 [h]	60	.264
	Likelihood	71.46	60	.148
	Linear-by-Associatio	.637	1	.425
	N of Valid	137		
Zanziba	Pearson Chi-	116.44 [i]	114	.419
	Likelihood	130.84	114	.134
	Linear-by-Associatio	3.324	1	.068
	N of Valid	126		

a. 117 cells (97.5%) have expected count less than 5. The expected count is

b. 138 cells (95.8%) have expected count less than 5. The expected count is

c. 159 cells (100.0%) have expected count less than 5. The

The contribution for spouse appears to be highly significant for Mtwara and Tanga (significance levels of .011 and .049 respectively implying that the contribution of spouse productive time to households welfare in these regions is eminent. The contribution by the Households Head productive time is almost significant for Arusha but again it does not differ much from that of spouse. For the other remaining regions, The contribution from HH head do not differ much from the spouse. However, the general picture we get from Table 11, The contribution of the spouse's productive and half productive times seem to explain to a positive contribution of their households poverty levels.

Table 10: Chi-square test for HH

Regio		Value	df	Asymp. (2-
Arusha	Pearson Chi-	120.65 [a]	98	.060
	Likelihood	138.44	98	.004
	Linear-by-Associatio	.231	1	.631
	N of Valid	136		
Kilimanjar	Pearson Chi-	134.01 [b]	122	.215
	Likelihood	150.19	122	.042
	Linear-by-Associatio	.164	1	.685
	N of Valid	154		
Tang	Pearson Chi-	160.62 [c]	136	.073
	Likelihood	176.86	136	.011
	Linear-by-Associatio	.054	1	.817
	N of Valid	134		
Coast	Pearson Chi-	137.13 [d]	124	.198
	Likelihood	145.36	124	.092
	Linear-by-Associatio	3.527	1	.060
	N of Valid	107		
Dar es	Pearson Chi-	79.91 [e]	84	.606
	Likelihood	88.68	84	.342
	Linear-by-Associatio	1.607	1	.205
	N of Valid	93		
Lindi	Pearson Chi-	126.28 [f]	118	.284
	Likelihood	139.09	118	.090
	Linear-by-Associatio	2.728	1	.099
	N of Valid	118		
Mtwara	Pearson Chi-	83.20 [g]	108	.963
	Likelihood	84.19	108	.956
	Linear-by-Associatio	.011	1	.917
	N of Valid	93		
Manyar	Pearson Chi-	85.75 [h]	88	.548
	Likelihood	89.95	88	.422
	Linear-by-Associatio	4.204	1	.040
	N of Valid	146		
Zanziba	Pearson Chi-	143.70 [i]	140	.398
	Likelihood	160.62	140	.112
	Linear-by-Associatio	.001	1	.977
	N of Valid	131		

a. 145 cells (96.7%) have expected count less than 5. The expected count is

b. 183 cells (98.4%) have expected count less than 5. The expected count is

c. 207 cells (100.0%) have expected count less than 5. The expected count is

The overall contribution of Gender Time as far as Productive activities are concerned to all the regions is displayed in the table 11 below.

Table 11 The Contribution of Gender Productive Time to all Regions

Gender	Significance level: Chi –square (Asymp sign.) 2 sided
HH Productive time	.138
Spouse Productive time	.000
1st child Productive time	.253
2nd child productive time	.114
HH Half Productive time	.442
Spouse Half Productive time	.007
1st child Half Productive time	.576
2nd child half Productive time	.292

From Table 11 above, Spouse Productive Time and Spouse Half productive Time significance levels are significant. This implies that spouses contribute more to the households productivity than the other members of the household. This means that spouses contribution to the households welfare can not be ignored and therefore spouse should be given all means in order to reduce poverty at the household level.

It is worthy to note that the level of technologies in use in most of the African production processes is low. The potential of the women can be realized better if appropriate technologies for household choirs, food processing,

preservation and storage are used. Labour time can be reduced further if appropriate farm tools are developed and used.

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