



# East African Journal of Arts and Social Sciences

[ejass.eanso.org](http://ejass.eanso.org)

Volume 7, Issue 1, 2024

Print ISSN: 2707-4277 | Online ISSN: 2707-4285

Title DOI: <https://doi.org/10.37284/2707-4285>

**ENSO**

EAST AFRICAN  
NATURE &  
SCIENCE  
ORGANIZATION

Original Article

## Community Perceptions on the Contributions of Public Universities to Community Transformation

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Article DOI : <https://doi.org/10.37284/eajass.7.1.2083>

**Date Published: ABSTRACT**

06 August 2024

**Keywords:**

Higher Education,  
Community  
Perceptions,  
Community  
Transformation,  
Gulu University,  
Post-conflict  
Northern Uganda,  
Community-  
Transformation.

Much as the role of higher education has been recognised for promoting development globally, communities surrounding universities in Sub-Saharan Africa are still grappling with poor quality health, low income, poor housing, unreliable electricity and other social amenities. This study determined community perceptions of the contributions of Gulu University to community transformation in post-conflict northern Uganda. A cross-sectional study design was employed to collect data while using researcher-administered questionnaires and geospatial techniques. Questionnaire data was analysed using principal component analysis, and descriptive statistics while geospatial data was analysed using buffers, spatial join tool, and overlay analysis in GIS environment. Findings revealed that the economic, political, spiritual and physical dimensions were important in explaining the transformation of communities surrounding Gulu University. The community surrounding Gulu University is perceived to have progressed well in terms of savings, business, commercial farming, and civil service; consumption of more than 3 meals per day, access to credit and remittances; easy access to health care, and quality education. The majority of the population can make free and independent decisions, are good at self-expression, exercise love for one another, enjoy living with community members, are at peace with one another, exercise kindness, waste is properly managed, and there is good access to water. However, there is slow progress in having alternative sources of income, only a few community members perceived: their level of education to have improved, participate in leadership and are taking part in politics. There is also a scarcity of respect for one another, endurance and faithfulness. The study concludes that (i) households need to think of alternative ways of generating income, given its relevance in enabling households to meet their daily income, (ii) education policies and other stakeholders need to provide more support for community members to pursue higher levels of education, (iii) more civic education to create awareness on the importance of participating in leadership and politics, and (iv) a need by religious sects to continue with more teachings on respect for one another, endurance and faithfulness in the community surrounding Gulu University.

#### APA CITATION

Asaf, A., Ologe, D. O., Elaijah, E., George, O., Betty, E. A. & Charles, A. (2024). Community Perceptions on the Contributions of Public Universities to Community Transformation. *East African Journal of Arts and Social Sciences*, 7(1), 457-473. <https://doi.org/10.37284/eajass.7.1.2083>

#### CHICAGO CITATION

Asaf, Adebua, Daniel Ochieng Ologe, Edekebon Elaijah, Oriangi George, Ezati Akullu Betty and Amone Charles. 2024. "Community Perceptions on the Contributions of Public Universities to Community Transformation". *East African Journal of Arts and Social Sciences* 7 (1), 457-473. <https://doi.org/10.37284/eajass.7.1.2083>.

#### HARVARD CITATION

Asaf, A., Ologe, D. O., Elaijah, E., George, O., Betty, E. A. & Charles, A. (2024) "Community Perceptions on the Contributions of Public Universities to Community Transformation". *East African Journal of Arts and Social Sciences*, 7(1), pp. 457-473. doi: 10.37284/eajass.7.1.2083.

#### IEEE CITATION

A., Asaf, D. O., Ologe, E., Elaijah, O., George, E. A., Betty & A., Charles "Community Perceptions on the Contributions of Public Universities to Community Transformation". *EAJASS*, vol. 7, no. 1, pp. 457-473, Aug. 2024.

#### MLA CITATION

Asaf, Adebua, Daniel Ochieng Ologe, Edekebon Elaijah, Oriangi George, Ezati Akullu Betty & Amone Charles. "Community Perceptions on the Contributions of Public Universities to Community Transformation". *East African Journal of Arts and Social Sciences*, Vol. 7, no. 1, Aug. 2024, pp. 457-473, doi:10.37284/eajass.7.1.2083.

## INTRODUCTION

Although universities are essential to the modern world's efforts to transform communities through research, innovation, and technology transfer (Price et al., 2021; Albulescu & Albulescu 2014; Urbano & Guerrero 2013; Cloete et al., 2011; Walzer et al., 2020), some reports indicate that communities surrounding universities, particularly in the developing world, appear to be mingled up in absolute poverty, shoddy housing, poor hygiene and health, poor quality education, subsistence agriculture and food insecurity (Coy et al., 2022, Banya, 2001, Blythe et al., 2018). Moreover, according to Cloete (2015) and Gómez Chova et al. (2021), universities are expected to play an important role in all spheres of society, including the social, economic, political, and spiritual. The contributions of a university as an institution have changed over time since the University of Bologna in Italy was founded in the year 1088. Although the original medieval colleges were intended to be teaching-only, from the beginning of the 19<sup>th</sup> century, they began to focus on how community transformation became an important focus (Brennan et al., 2004; Clark, 1983; Perkins, 1972). The UN Sustainable Development Goals (SDGs) introduced in 2015 presented an opportunity for higher education institutions, particularly universities, to pursue their third mission of transforming society.

However, not many universities have taken advantage of this chance (Compagnucci & Spigarelli, 2020; Leal Filho et al., 2019). And yet higher education, particularly in developing nations, can be more profitable if it serves the needs of the local community. This can reduce gender disparities, enhance access to gainful work, prepare students for emergencies, and create more engaged citizens. To achieve these, there are more and more calls on universities to shift their focus to the transformation of society. Universities are now under pressure to reinvent and broaden their objectives to focus on how their surrounding communities can be transformed economically, environmentally, socially and politically (Rubens et al., 2017; Brown & Baker, 2017; Barnes & Fairbanks, 1997). As communities advance in terms of their expectations and ideals, the dynamics of knowledge formation are shifting and the demand on universities to add the element of societal transformation in addition to their primary missions of teaching and research is gaining momentum (Urdari et al., 2017 & Abreu et al., 2016). To pursue the transformation of communities, however, a number of activities are involved and a number of proponents provide precise information on how community transformation can be pursued.

In this study, the Activity Theory (Engestrom, et al., 1996; Engestrom, 1999 and 2001; Roth, 2004)

which explains the transformation of individuals and their power to transform their communities was used to examine households' perceptions of the contributions of Gulu University to community transformation through the economic, social, political, spiritual and physical dimensions. According to Getu (2002), community transformation is a deeply rooted change in people's economic, physical, social, political and freedoms, and spiritual aspects of life. Transformation is an ongoing process of changing and improving the way of doing things in the community and does not mean that certain goals may be reached at certain time frames (Getu, 2002). Additionally, Freire (1996), Harvey and Knight (1996), and Waghid (2002) view transformation from the social perspective measured through high standards of living, fitness for purpose, value for money, life experiences of student's empowerment, and enhanced abilities to perform tasks.

Meanwhile Brown and Baker (2017) view community transformation as an initiative to build up, energize, and stabilize enduring social, environmental, and economic problems that limit peoples possibilities to better their standards of living. Brown and Baker measure community transformation using empowerment (i.e. building and maximizing collective capacity to enact social change), engagement (i.e. linking of residents in advocating for issues), trust (i.e. description of a community concern), cohesion (i.e. a core element of community empowerment that brings community members together to analyse, articulate, and demand community change, and as necessary for community mobilization and engagement), and leadership role (i.e. key facet of an empowering context that builds the capacity of residents). More still, Barnes and Fairbanks (1997) focus on the empowerment perspective of community transformation. To them, community transformation is a change in the quality of each person's life measured by the ability to reproduce, growth and development, energy use, response to their setting, and the ability to adapt to the environment measured by the conditions in which people live. Chankseliani and McCowan (2020)

note that, aside from the universities' efforts to address global concerns through the generation of employment opportunities, wealth creation through investments, access to energy, ecosystem protection, access to universal education, and health; universities in developing countries do not seem to put much emphasis on these, which could enable them contribute to easily achieving the SDGs.

Given the limited scope of the university's community engagement activities in developing countries, McCowan (2016, 2019); Milton & Barakat (2016) and Owens (2017) recognize a gap and thus emphasize the need for documentation of the range of activities directly aligned to community transformation and attainment of SDGs. According to De Jong et al. (2014), Agasisti et al. (2019), and Secundo et al. (2017) where universities have adopted activities oriented to community transformation, they are tending to become engines of socio-economic and cultural development of regions they operate by bringing knowledge and technology closer to the people. Brennanetal (2004) and Chatterton (2000) had long seen that, particularly in Central and Eastern Europe, universities seemed to play a poor role in spurring socio-economic transformation. Universities may, nevertheless, play a significant role in the longer-term social and economic development of society due to the regular reforms in higher education. In this manner, the university's ability to transform communities in a wide array of activities that strive to impart knowledge, entrepreneurial abilities, and innovation for social welfare skills may be limited (Bortagaray, 2009). McGrail (2013) claims that Lehigh University in America approved four main priorities, including support for public education aimed at working with the neighbourhood schools and the district as a whole to improve student performance, aiding local businesses, enhancing commerce, and reducing crime by fostering partnerships with neighbourhood law enforcement organizations. The area is given life and collaboration chances by the university, with the possibility of cross-cultural integration.

This generally fits well with the claim made by Bonilla-Santiago (2020), who argues that the University provides social and intellectual capital to strengthen a partnership through civic engagement and community development for college students, faculty, and staff, as well as research and support for new innovations. Bonilla-Santiago's study focused on community development transformation of the Cooper neighbourhood at Rutgers Camden University and LEAP Academy School. Interestingly, Rukarwa et al. (2018) claims that some universities in Africa offer unique contributions to a change process by playing an important role as leaders in education, research and technology development and transfer. Additionally, in a study on institutional policy for community transformation activities in Uganda, Ofuyuru (2018) observed through literature that some universities in the region were reported to have developed academic programmes geared towards the transformation of community. He points out that other universities adopted the opening up of campuses in the communities away from their main campus. Some started open and distance education, along with community cultural activities like arts, drama, music and dance. Meanwhile, others created

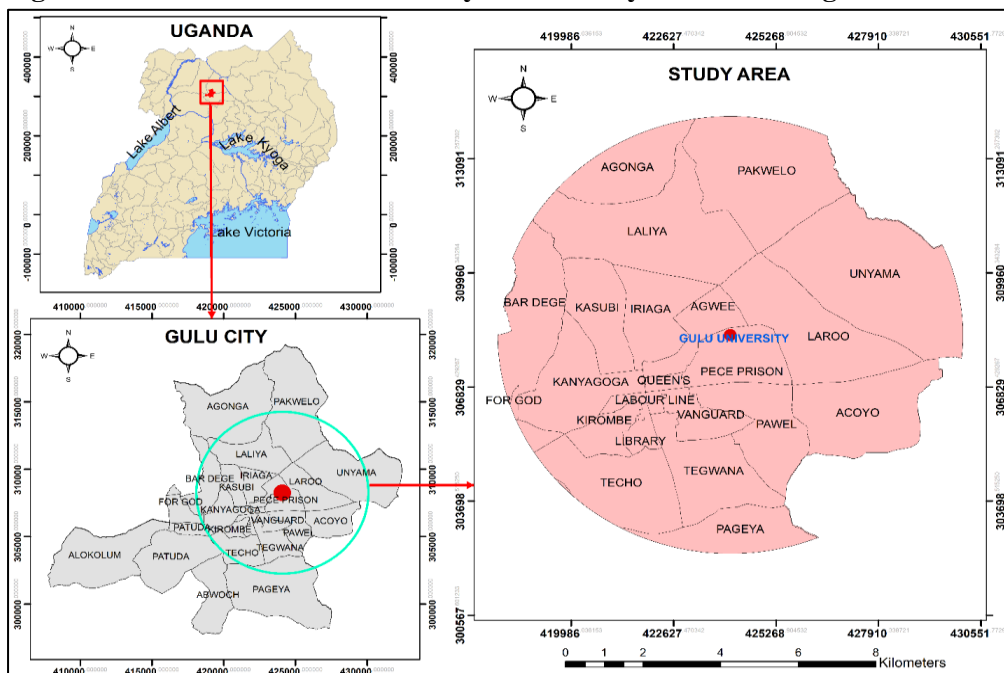
specialised units in the form of centres for indigenous knowledge. Analysis of the aforementioned literature shows that paucity of knowledge exists on the multidimensional perspective of universities contribution to community transformation in the Ugandan context. Therefore, this study aimed to assess the contributions of Gulu University to community transformation in post-conflict northern Uganda.

## METHODS AND MATERIALS

### Location of Gulu University in Gulu City in northern Uganda

The study was conducted in Gulu city in northern Uganda (Figure 1). Gulu City consists of two divisions (i.e., Pece-Laroo, and Bar Dege-Layibi), and Gulu University is located in Pece-Laroo Division. The justification for the choice of Gulu city is because it forms the surrounding community of Gulu University. Additionally, the area is chosen based on its location in an area that suffered conflict from 1986 to 2006 characterised with low level of socio-economic development (Gulu University Strategic Plan, 2004/05-2008/09).

**Figure 1: Location of Gulu University in Gulu City in northern Uganda**



Source: Self-developed using UBOS shape files (2020)

A cross-sectional research design was used to capture data on the dimensions of community transformation and GPS coordinates of households. The target population was the community surrounding Gulu University within a radius of approximately 6 km. This is because the study's issues were centered on university's

contribution to community transformation while the unit of analysis was the household.

### Sample Size Determination

The sample size was computed from the household population above 18 years of age based on the procedure used by Israel (1992) (*Table 1*).

**Table 1: Sample size determination**

Study area	Sub Counties	Parishes	Population of persons above 18 years	Sample size @ 5% margin of error
Gulu City	Laro-Pece	Pece-Prison	3060	97
		Agwee	3571	107
	Bardege-Layibi	Labour line	1530	47
		Kanyagoga	4628	128
Total Population/ sample			<b>12713</b>	390

The study sampled 390 respondents out of a population of 12713 from Laro-Pece and Bardege-Layibi Divisions of Gulu City. The sample size was computed from the household population above 18 years based on the procedure used by Israel (1992). Additionally, multi-stage sampling was used (Bennett & Iyanagec, 1988) due to its cost effectiveness, flexibility and more than two sampling stages used. In this study, the first stage involved purposive sampling of the 4 parishes that fall within a 6-kilometer radius in the 2 Divisions in Gulu City. The second stage involved random sampling of households.

In terms of data collection, self-administered questionnaires were used to collect data on the dimensions of community transformation. The self-administered questionnaires consisted of mainly closed-ended questions administered to respondents at their homes after seeking their consent. Closed-ended questions were majorly used because they offer a quick tool for data collection, coding, interpretation and quantification of outcomes (Jones & Tanner, 2015). This study employed questionnaires to understand community perceptions on the contributions of public Universities to community transformation based on the economic, social, political, spiritual and physical dimensions. Both closed and open-ended questions were used. The study was conducted within a radius of 6 km from Gulu university and GPS coordinates of the

surveyed households were capture to understand their transformation based on distance from Gulu University. Three buffer ring units were employed during the data collection at a radius of 1.5 km, 3 km and 6 km. this was intended to capture information on community transformation at different distances.

To analyse data obtained using a questionnaire, first, descriptive statistics were employed to assess community perceptions of the contributions of Gulu University to community transformation based on the economic, social, political, spiritual and physical dimensions.

Second, PCA was used to determine the contributions of the dimensions of community transformation. The study had five dimensions of community transformation i.e., economic, social, physical, political, and spiritual. Each of these dimensions had varying number of indicators, i.e., economic had 6; social had 5; physical had 14; political had 5, and spiritual had 8 variables and in total, there were 38 variables. All these variables were subjected to PCA. However, the study begun by assessing the prerequisites of PCA as suggested by Tabacnick and Fidell (2007, 2011). That is (i) sampling adequacy and (ii) the strength of intercorrelation within the correlation matrix which is measured by bivariate correlation coefficients which must be 0.30 and above. When the data was tested, the results met all the requirements, that is, Kaiser-Meyer-Olkin (KMO)

statistic was 0.78 which was quite above the minimum (0.6). The sample adequacy and Bartlett's test of sphericity was also statistically significant ( $p < .001$ ). Furthermore, most inter-correlations in the correlation matrix were above 0.30. This demonstrated the suitability of using PCA as statistical tool for data reduction technique in this study.

The first phase of PCA, started with extraction of determinants, where extraction process was to aggregate the determinant and determine those that contribute more. The study applied scree plots with the purpose of aiding visualization of the eigenvalues associated with each variable. Eigenvalue is the measure of the amount of variation in the variables associated to each determinant. The larger an eigenvalue of a variable, the more the variation explained by the variable in the dimension. Moreover, variables with eigenvalues less than 1 are usually considered to be less useful. This makes it possible to assess the quality of empirical determinants that are essential to the group of variables. In this way, one is able to judge the number of empirical determinants fundamental to a set of variables. The variables that qualify the percentage of the variance are accounted for by the predefined dimension presented. Usually, this estimate is called communality estimates (weight). The variable's communality estimates should, as a rule of thumb, be at least 0.30 (Tabachnick & Fidell, 2007).

The next phase was rotation performed to illustrate the relationship between each variable and the determinant. This is where empirical evidence of factors is reconstructed. Since, the study conceived or hypothesised the dimensions of community transformation based on literature review. The study performed oblique factor rotation techniques based on promax algorithm; and this approach allows for correlation between dimensions since Bartlett's test indicates correlation ( $P < .001$ ). This result was presented using pattern matrix which provides additional evidence on the commonality criterion used to present the determinants of community

transformation. Putting it differently, it represents the relation between a variable and a factor after removing the influence of other determinants.

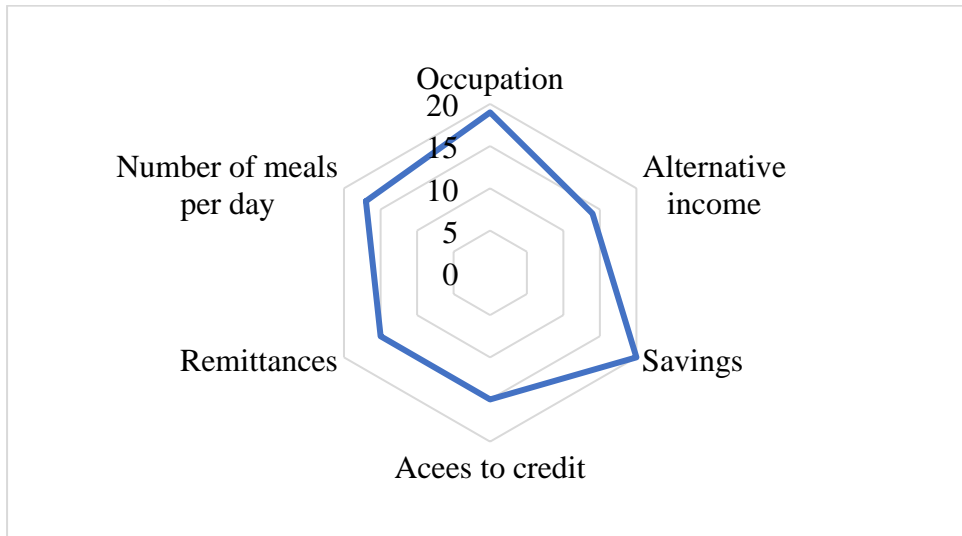
Third, the study employed a geospatial analysis to understand how the community surrounding Gulu University was transformed based on distance from the university. This analysis was based on the three buffer rings created referred to here as (analysis units with a 1.5, 3, and 6 km radius). Using the spatial join tool, data was joined to these units of analysis. A new field was created, and using the field calculator, percentages for each variable of transformation were calculated. This was later transformed into point data within the GIS environment and using an overlay analysis, maps were generated showing the contribution of Gulu University to community transformation.

## RESULTS AND DISCUSSION

### Community perceptions on the contributions of Gulu University to community transformation based on dimension

Perception of the contributions of Gulu University through the economic dimension (Figure 2) revealed that the surrounding community has achieved transformation in terms of improved savings (20%), more occupations in business, commercial farming and civil service (19%), having three to five meals per day (17%), and accessing remittances and credit each (15%). However, very few of the community members perceived to have been transformed by having alternative sources of income (14%). The high progress in savings is likely to be a result of the existence of several community savings and credit associations that have emerged due to the several business opportunities that have been promoted by the high population of students and staff of Gulu University. Thus, community members have the liquid cash that they can easily save. This finding is in line with a report by Pephrah (2015) who indicated that the savings of communities surrounding universities in Ghana increased and in turn led to creation of employment opportunities thus, contributing to community transformation.

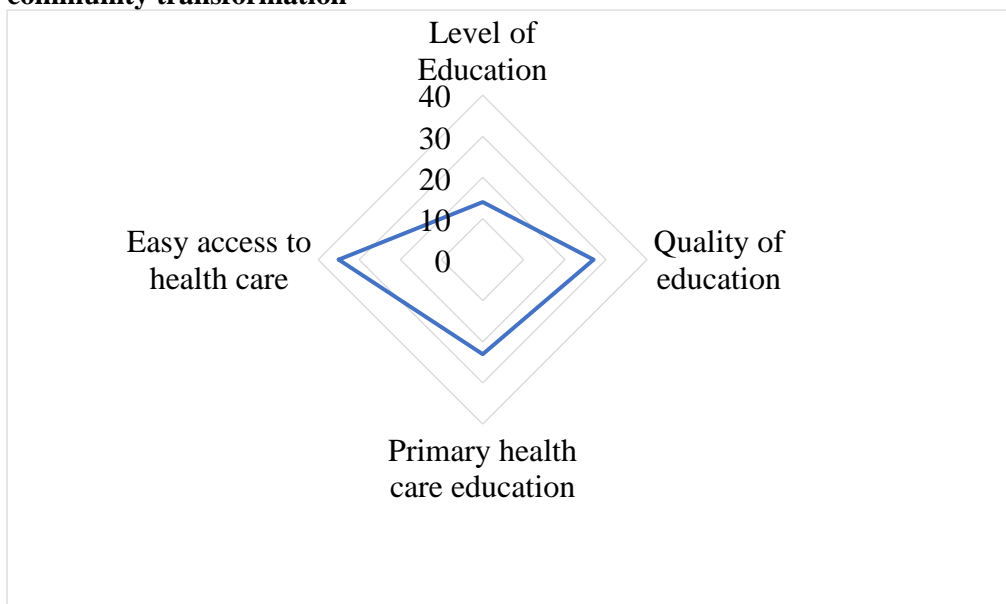
**Figure 2: The economic dimension of community perceptions on contributions of Gulu University to community transformation**



Perception on the contributions of Gulu University to community transformation through the social dimension (Figure 3) revealed that the surrounding community has achieved more in terms of easy access to health care (35%), quality education (27%), and primary health care education (23%). However, only a few of the community members perceived their level of education (14%) to have improved. The high community achievement in health care could be explained by the existence of Gulu University

Health Centre which serves the general community that seems to appreciate the service. This study finding agrees with a report by Senzon (2011) who found out that providing health care services to communities was embraced as the heart of community transformation. In the same vein, Grumbach and Mold (2009) reported that providing primary health care was a very important aspect of community transformation in the United States of America.

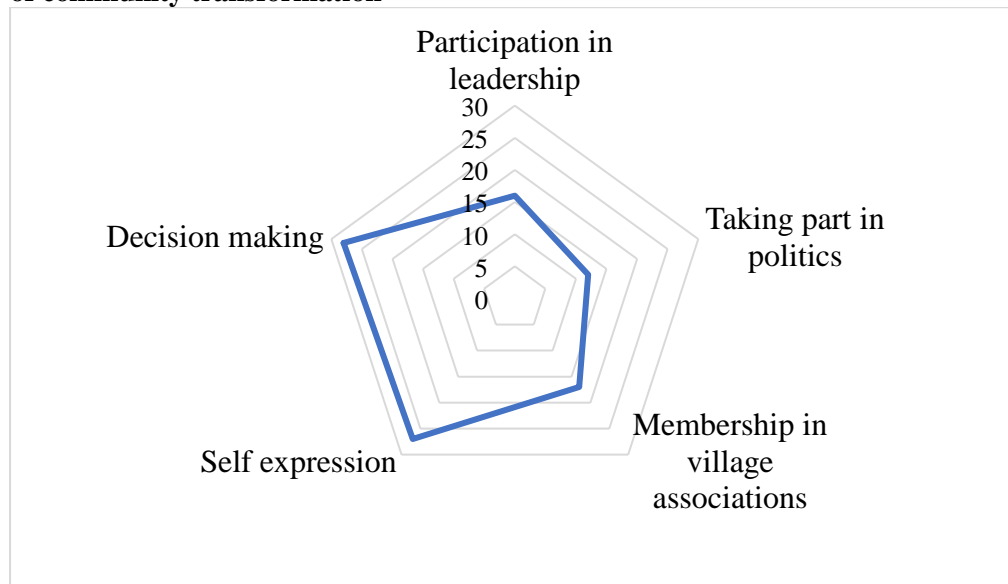
**Figure 3: The social dimension of community perceptions on contributions of Gulu University to community transformation**



Community perception of the contributions of Gulu University through the political dimension (Figure 4) revealed that the surrounding community has achieved transformation in terms of free and independent decision-making (28%), freedom of expression (27%), and membership in village associations (17%) while not many participate in leadership (16%), and taking part in politics (12%). Therefore, the community perceived to have achieved more in free and independent decision-making, freedom of expression, and membership in village associations. Independent decision making and freedom of expression are likely to be associated

with enlightenment and exposure of the surrounding community resulting from the several activities being conducted by the university such as research, teaching, religious activities, community outreach activities to mention but a few. Furthermore, many community members indicated that they are members in village associations/savings groups. This could be because of the availability of cash in people's hands brought about by the several income generating activities and employment opportunities provided by Gulu University and other investment ventures that have been promoted by the existence of the university.

**Figure 4: Community perceptions on contributions of Gulu University to the political dimension of community transformation**

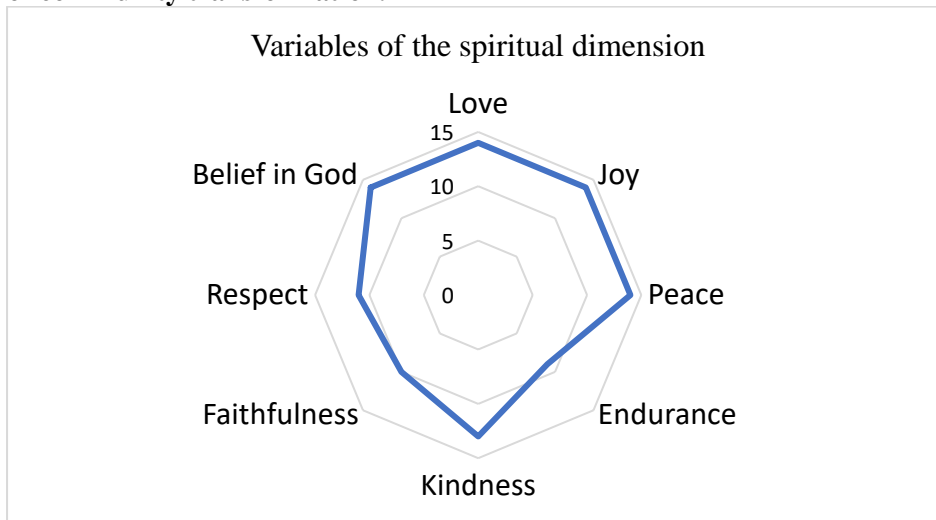


Community perception on the contributions of Gulu University in terms of the spiritual aspects (Figure 5) revealed that the surrounding community exercises love, joy, peace and believe in God each having 14% response. These were followed by kindness (13%), respect (11%) and endurance (9%). Perceptions that most of the community members are exercising love, joy, peace and believing in God, were kind and respectful could have been proliferated by the several religious denominations that have been promoted by Gulu University e.g., the Catholics, the Anglicans, the Born Again, the Moslems, the

Seventh Day Adventists, and the Jehovah's Witnesses, all of which preach love for one another, peaceful living with the neighbours, believe in God, and promoting kindness and respect for one another. This finding is in line with the report by Agbiji and Swart (2015) who revealed that in Africa, spiritual aspects form a crucial factor of the Africanness and impacts moral, socio-political and community transformation.



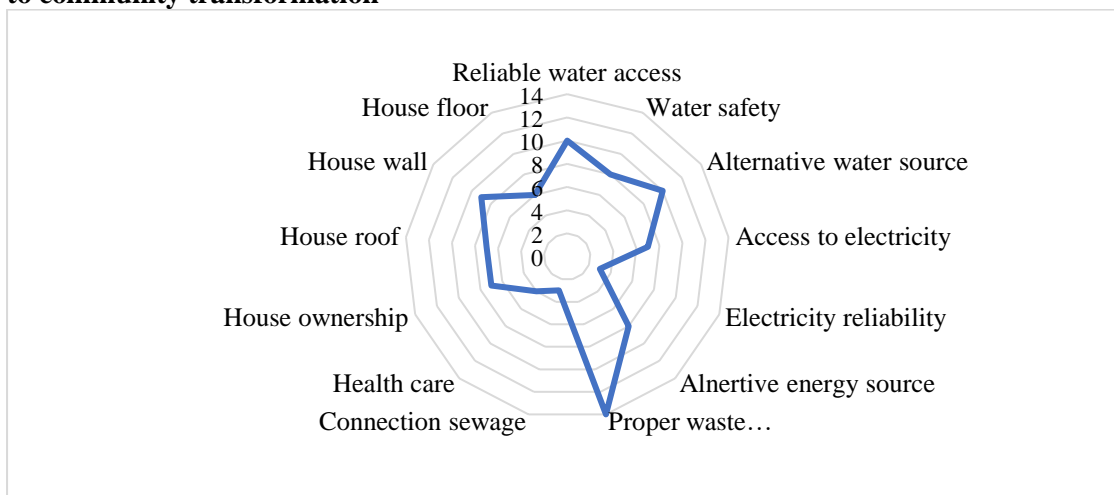
**Figure 5: Community perceptions on contributions of Gulu University to the spiritual dimension of community transformation.**



Perception on the contributions of Gulu University to community transformation through the physical dimension (Figure 6) revealed that the surrounding community has achieved more in terms of proper waste management (14%), access to alternative water sources and reliable water access both (10%) each, access to safe water and alternative energy source both performed at (8%) each while, access to electricity represented 7% response. The rest of the responses on the physical dimension aspects were at less than 5%. This finding reveals that hygiene aspects of the community surrounding Gulu University have been improved through waste management, water safety, reliability and alternative access. These are key factors in minimizing environmental filth,

disease reduction, and propelling human well-being and transformation. This study finding is similar to the finding by Smol et al., (2020) who reported that in Polland, waste management was of special interest to the European Commission because of its influence on community transformation. Likewise, this study finding is supported by the report by Zaman and Lehmann (2011) who revealed that in order to reduce overcrowding and improve quality of life, Adelaide and Stockholm cities in the high-consuming countries, of Australia and Sweden respectively, deliberately promoted zero-waste concept and succeeded to transform the communities.

**Figure 6: The physical dimension of community perceptions on contributions of Gulu University to community transformation**



### Factor reduction of dimensions and variables of community transformation

Initially, the study had conceptualized community transformation based on 5 dimensions (Figure 2-6) with 38 variables following Getu (2002), Harvey and Knight (1996) and Waghid (2002) definitions. When these were tested using PCA, all the 6 components explained up to about 36% of the variance. However, having removed the redundancies, 4 dimensions with their respective 24 variables emerged (Table 1) to be contributing

most to community transformation based on Eigen values greater than 3 and these include: (physical, economic, political and spiritual) that could explain transformation in the context of the community surrounding Gulu University while, the social dimension did not show up to be having any contribution. The total variance explained by the first six components increased to 52%. Thus, these explained more than half of the variance in community transformation.

**Table 1: The percentage variance for the components/dimensions of community transformation**

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	3.499	14.577	14.577
2	2.176	9.065	23.642
3	2.091	8.714	32.356
4	1.763	7.345	39.701
5	1.577	6.571	46.272
6	1.411	5.881	52.153
7	1.198	4.990	57.143
8	1.079	4.498	61.641
9	1.001	4.173	65.814
10	.865	3.604	69.418
11	.794	3.308	72.726
12	.755	3.145	75.872
13	.667	2.780	78.651
14	.655	2.730	81.382
15	.590	2.460	83.842
16	.579	2.414	86.256
17	.545	2.270	88.526
18	.501	2.088	90.614
19	.478	1.991	92.605
20	.445	1.855	94.460
21	.398	1.660	96.120
22	.371	1.546	97.667
23	.301	1.256	98.923
24	.259	1.077	100.000

### Transformation of communities based on distance from Gulu University

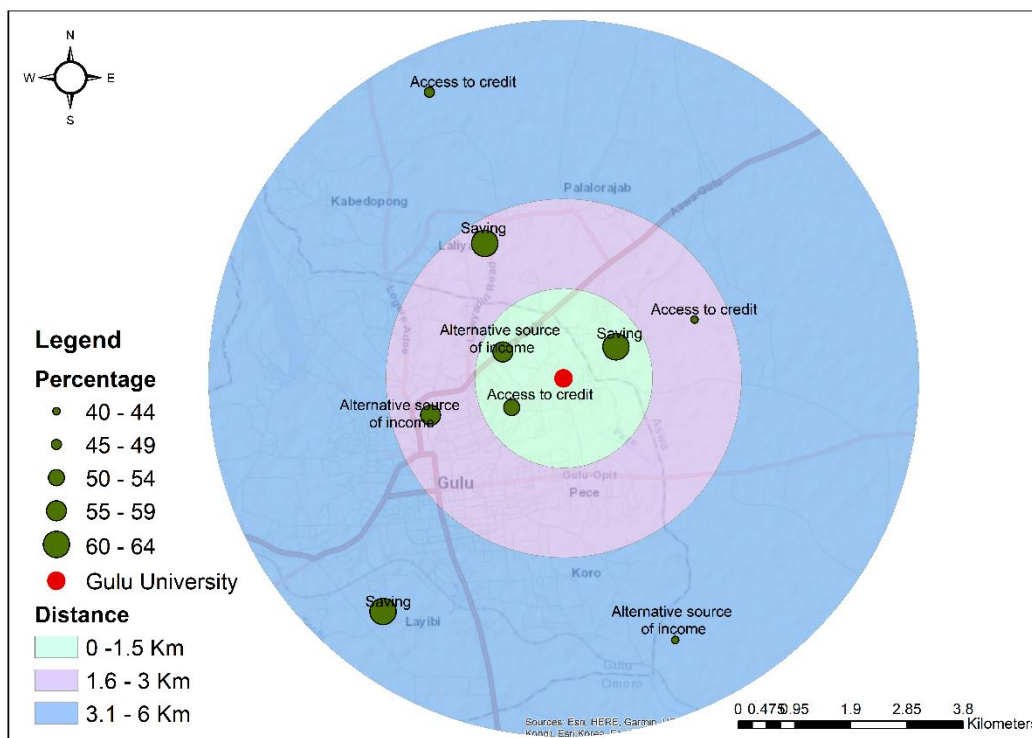
Findings on economic transformation of communities surrounding Gulu University based on distance from the university (Figure 10) revealed that majority of the households (60-64%) perceived to have progressed in terms of savings in all the three rings within the 6km radius. Whereas, a good number of households (54-59%) had progressed in terms of alternative sources of income in the 1.5 km and 1.6-3 km rings, only a

moderate number of households (55-59%) had alternative sources of income in the 3.1-6 km ring. Additionally, whereas a moderate number of households (50-54%) reported having access to credit in the 1.5 km and 3.1-6 km ring, a very small number denoted having access to credit in the 1.6-3 km ring. It is important to note that while saving remained high for all the respondents across the three different rings (analysis units), there was a decrease in alternative sources of income as distance increased further away from

the university, implying that closer households seemed to be more transformed by the university than those households that are located far away from the university. Access to credit relatively remained low across the three rings, meaning that while the university performs well in transforming its surrounding community in terms of savings, most households are not transformed when it comes to access to credit and alternative sources of income in the 3.1-6 km radius. More savings followed by access to credit is likely to be due to the government and non-governmental

organizations programmes of promoting saving culture through forming saving groups that play an important role by providing the urban poor with affordable loans in times of crisis or to start businesses. The finding is not far from the report by Jami et al., (2009) who reported that, structured program arrangements, containing financial education, and peer mentoring saving groups and targets were important in influencing people's saving in the American Dream Demonstration saving model across the USA.

**Figure 10: Economic transformation of communities based on distance from Gulu University**



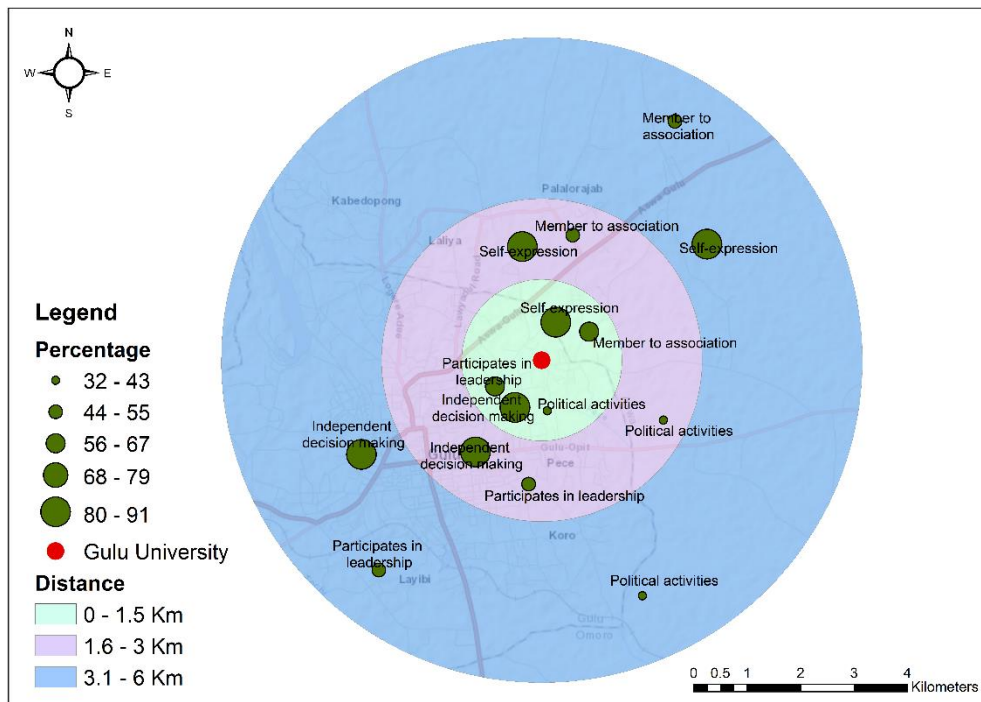
Findings on political transformation of communities surrounding Gulu University based on distance from the university (Figure 11) revealed that while households in all the three rings reported being able to make independent decisions and express themselves freely (80-91%), there was low participation in political activities (32-43%) in all the three rings. Whereas a good number of households (56-67%) participate in leadership within the first ring, a lower number (44-55%) participates in leadership in the second and third rings. Concerning membership to associations, most households (56-67%) were members of associations in the first

ring (1.5 km radius), while in the second and third rings (1.6-3 and 3.1-6 km rings respectively), only 44-55% of the households were members of association. Therefore, these results show that most households who belong to associations are closer to the university. In addition, the results revealed that household's participation in broader political activities and leadership is relatively low across all the rings. It is likely that the high concentration of settlements around the university has promoted small-scale businesses which in turn has encouraged people to form several savings and credit associations of peers and neighbourhood for socioeconomic benefits as

they take advantage of the government policy on promotion of cooperative saving groups. The independent decision-making and freedom of expression reflected among the community could easily be due to close and constant association with university staff and students whose academic nature always mirrors in free analytical reasoning in all situations. The university community engagement programmes could be enhancing this

occurrence. Meanwhile the low level of participation in leadership could be a reflection of the general characteristic of the region where people tend to look at a few particular individuals to hold leadership positions. Studies appear to be rare on issues of independent free decision-making, association and participation in political activities based on distance to universities.

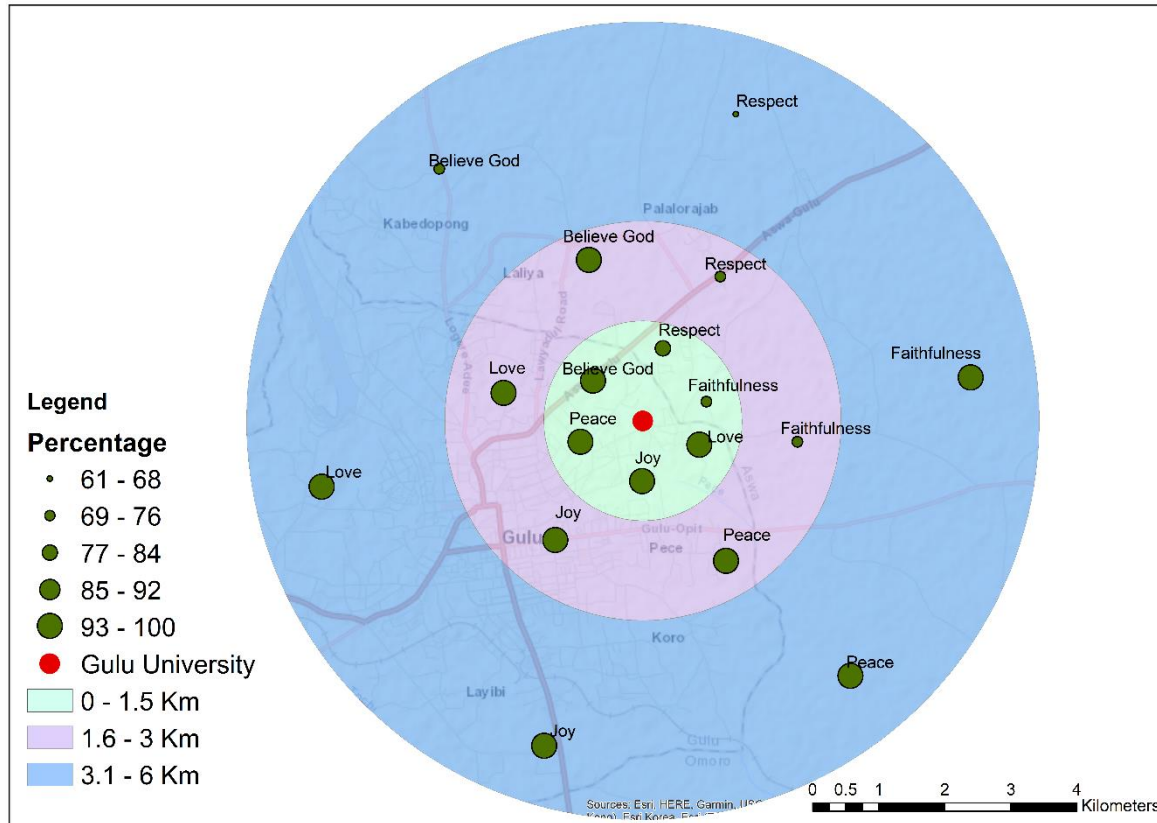
**Figure 11: Political transformation of communities based on distance from Gulu University**



With regard to transformation of communities in terms of spiritual aspects (Figure 12), the results revealed that most households who believed in God (85-92%) and (93-100%) were within the first and second rings closer to the university respectively. Across the three rings, 93-100% of the households perceived to have progressed well in love for one another, at peace with others, and enjoy living with community members. Most of the households who were faithful to one another (93-100%) were in the third ring as compared to those closer to the university (first and second rings). Additionally, majority (77-84%) of those who had respect for one another were in the first and second rings. Thus, these results show a

transformation in the spiritual beliefs and practices of households closer to the university, but scarcity in faithfulness among individuals, with a lower percentage of households closer to the university reporting not faithful to one another. This could be a result of a spillover of increased promiscuity among the student population in the community around the university. This finding does not fully conform to the Bible book of Proverbs 3:3-4: that says “Let love and faithfulness never leave you; bind them around your neck, write them on the tablet of your heart. Then shall you see favor and good understanding before God and men.

**Figure 12: Spiritual transformation of communities based on distance from Gulu University.**



Findings on the physical transformation of communities surrounding Gulu University based on distance from the university (Figure 13) revealed that most households (39-50%) and (78-96%) had houses with concrete floors and brick or block walls respectively in all the three rings, while a small percentage of households (3-14%) reported to have house walls made up of mud in all the three rings. In terms of house roofs, a good number of households (59-73%) in both 1.5 and 1.6-3 km radius (rings) had grass thatched houses while, 30-44% had iron sheet roofed houses in the 1.5-kilometre radius, and 16-29% had iron sheet roofs in the 1.6-3-km radius. In the 3.1-6 km radius, most households (59-73%) had iron sheet houses, while 30-44% had grass thatched houses. It is important to note that some of the areas in the 3.1-6 km radius are close to the city centre, which may influence the type of roofing material used by households. The high percentage of grass-thatched houses within the 1.5 and 1.6-3 km radius of the University is likely a reflection of the Limu settlement near Gulu University which was an Internally Displaced Persons (IDP) camp

during the war, and many of the houses have been maintained and occupied to date. This conforms with a report by Hashemi et al. (2015) who found out that most of the grass-thatched houses are being replaced with galvanized iron sheet roofs in many improving income groups located in city centres.

Regarding access to water, energy, sewerage network, and waste disposal, it was found that these also varied across the three analysis units. In the 1.5 km radius, most of the households (78-96%) had access to reliable water and alternative sources of water in times of water shortage while those who reported access to safe drinking water ranged from 59-77% in this unit. Although access to reliable electricity ranged from 20-38% within the 1.5 km radius, about 39-58% of the households were found to have access to electricity. It was found that access to sewerage networks and waste disposal points were limited to 0-38% of the households in all the three rings.

In the first two rings, 78-96% of the households had reliable access to water, access to alternative

sources of water and energy and 59-77% had access to safe water while access to electricity was low in the second ring as compared to the first ring, with only 39-58% of the households having access to electricity. It is likely that the community being in urban area of Gulu City, the households are benefiting from the central water supply network system which serves Gulu University and other institutions in the city along with households within. This finding is in conformity with the report by Price (2021) who underscored the necessity for global water monitoring initiatives in access and quality.

In the third ring (3.1-6 km radius), most households 78-96% had reliable access to water, while 59-77% had access safe water, alternative sources of water and energy and 39-58% of the households owned houses. The lack of proper waste disposal and sewerage networks continues to be a significant issue across all three rings. This signifies that households around Gulu University practice onsite management of sewage rather than relying on centralized treatment facilities, yet they are also faced with the challenge of waste management since most households do not have a proper waste disposal point. These challenges may be detrimental for both the community and the university and may have public health concerns. It is already evident in the results that households across the three rings have limited access to safe water which could be a result of lack of proper sewage management system and poor waste disposal in the community around Gulu University. As in Section 4.2.1, this finding is in conformity with Smol *et al.*, (2020) report in Polland that waste management was regarded highly because of its influence on community transformation.

## CONCLUSION

Economically, findings revealed that the community has progressed in savings, business, commercial farming, and civil service; the number of meals consumed per day had increased, a moderate number are receiving remittances and also easily accessing credit, However, there is slow progress in having alternative sources of

income. Thus, households need to think of alternative ways of generating income, given its relevance in enabling households meet their daily income (Oriangi *et al.*, 2020).

In terms of the social dimension, the surrounding community has achieved more in terms of easy access to health care, quality education, and primary health care education. However, only a few community members perceived their level of education to have improved. This implies that education policies and other stakeholders need to offer more support to finance higher levels of education.

When it comes to the political dimension, the surrounding community has progressed in terms of free and independent decision-making, and freedom of expression. A moderate number are members of village associations and participate in leadership, while only a few takes part in politics. This implies that more civic education is needed so that the local population is sensitized on and imparted with the knowledge on the importance of participating in leadership and politics.

The community also acknowledged to be doing well in terms of love for one another, enjoying living with other community members, living at peace with one another and believe in God and kindness. However, the community indicated scarcity in respect for one another, endurance and faithfulness. This revealed that religious sects need to continue teaching and preaching lessons relating to respect for one another, endurance and faithfulness church services, religious workshops, seminars and crusades.

The surrounding community has also achieved more in terms of proper waste management, and access to water and electricity. Achievement in the national grid electricity reliability, safe water and connection to sewage were perceived to be limited. These need to be areas of emphasis by government and other stakeholder if all the SDG goals are to be achieved by 2030.

In terms of transformation with respect to distance from the university, people have progressed well in saving and having alternative sources of

income, aspects of love, joy, peace and kindness within the 1.5 km radius distance while they are still lagging behind in faithfulness to one another.

### ACKNOWLEDGEMENT

This study acknowledges the generous funding extended by Gulu University in terms of tuition waiver for my PhD program, the funding for the initial field data collection phase by DANIDA through the BSU phase I and II project at Gulu University and the short study stay in Denmark which facilitated my proposal writing.

I also acknowledge the financial assistance granted by CARNEGIE Cooperation of New York through CECAP (Consolidating Early Career Academic Program) 2022-2024 postdoctoral grant extended through Dr. George Oriangi from Makerere University that financed the publication costs.

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