DETERMINATION OF SPATIAL DISTRIBUTION OF FARM LANDS AND SMALL SCALE INDUSTRIES: A CASE STUDIES OF SELECTED AREAS IN GIREI LOCAL GOVERNMENT OF ADAMAWA STATE, NIGERIA.

[1]Fati Astapawa Adamu and [2]Sa'adatu Ahmed Maunde

[1]Department of Agricultural and Environmental Engineering, School of Engineering and Engineering Technology, Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria. fatiastapawa@gmail.com.
[2]Department of Urban and Regional Planning, School of Pure and Applied Sciences, Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria. Saadatuahmed99@gmail.com.

ABSTRACT

Globally, farm lands and small scale industries are important in the physical and economic development of towns and rural areas. Data was obtained primarily from physical observation, administration of structured questionnaires and conducted interviews to 50 subjects in each of the study areas. Summary of responses of past and present nature and problems of farming and spatial distribution of farm land and small scale industries in study areas was documented. From the respondents responses, constrains and solutions were analyzed. Geographical Information System (GIS) was used to get the graphic features, farm lands, small scale industries, patterns and maps in the study areas. The secondary data was obtained from related literatures. Statistical analyses of all data was computed. The main findings show that farm lands and small scale industries were not evenly distributed and there are a lot of problems hindering that. Out of sample population 150 (100 %), 98.9 % responded. The annual profits for 150 farm lands and 30 small scale industries ranges from N200,000.00 to N15,500,000.00. The study showed that 73% of the farming business and small-scale industries start off with personal savings, 16.7% got loan from cooperative societies while, 10 % got theirs from the government. Raw materials for the small industries and farming inputs was found within reach in the study area with little from outside the state. Analyses shows 23.3% had problem of lack of infrastructure and credit facilities, 13.3% lack of access road to market their goods and 10 % faced with the problem of inadequate and inappropriate intermediate technology to expand their business. The F- 0 value obtained for the varietals differences between special distribution of small scale industries were found less than values of farm lands and those in the F- Table at 5% level of confidence, which signified the existence of significant differences between the varieties. Issues on availability of farm lands, industrialization, commercialization and distribution were discussed.

INTRODUCTION

Agricultural activities and small scale industries varies between developed and developing nations. These depend on parameters best suitable for the promotion of micro, small, medium, large farms and small industries. Man, society, rural areas and nations would severely be limited in socio- economic

development without industrialization. Prior to Nigerian independent, the industrialization and farming business was almost totally dominated by the colonial Masters and other European multinational companies (Adamu, 2019 & Ajayi, 1998). In many developed and developing countries, the governments assist farmers with favorable policies, programs and loans (Maunde et, al, 2004). Earlier studies confirmed that manufacturing and agricultural activities in Nigeria are concentrated in few states, ports and major administrative centers (Maunde, et, al., 2005). Some recent examples include scrapping of the marketing board system for food and export crops, the establishment of the Agricultural Development Projects (ADPs) and the River Basin and Rural Development Authority (RBRDAs), and the use of various input and output price incentives to promote accelerated adoption of improved technology (Igbeka, 2003). Furthermore, Onwualu, (2003) reported that government had embarked on strengthening Rural Agro-industrial Development Scheme (RAIDS), an arm of Federal Department of Agriculture (FDA), by upgrading it into a full – fledged unit (NRP 1996- 1998). This was to enable the unit render effective technical support to ADPs and prospective entrepreneurs through development of agro – processing equipment and dissemination on agro – processing innovations and adapted technologies through information communication technology.

 Federal and state ministries of industry and commerce have adopted the criterion of value of installed fixed capital to determine what a small scale industry should look like: N 60,000.00 in 1972, N150,000.00 in 1979, N 500,000.00 in 1986, to a fixed investment of not more than N2,000,000.00 in 1992. This figures is exclusive of land, building and subject to government determination and public policy (Oduwale, 1989 & Ajayi, 2002). However, reverse is in the case of farm lands because most of the lands are inherit from fore fathers and is been hired annually, thus, a key to rural empowerment in all developing nations. Small scale industries are vital in the process of industrialization in the said nations where capital is scares, labour are plenty and skills are limited (Ajayi, 2001).The profit and input facilities like improved seeds, fertilizers and pesticides ranges from N150, 000.00 to N10,000.000.00 (One hundred and fifty thousand to Ten million Naira The size and nature of small scale industries allow them to be more proactive, flexible, entrepreneurial and most efficient than the larger firms, hence their enviable success records, can translate ideas into reality(Maunde & Sajo,2003).

These disparity in the distribution of manufacturing industries and agricultural activities has been explained in terms of the need for the valorization of raw agricultural products or the treatment of raw materials for export, or through the principle of import substitution adopted by the Nigerian government as their industrial planning strategy (Ayeni, 1981). According to Husain (2012), land compensation problems in relation to urban planning, industrialization and agricultural farm layout is paramount. The patterns of distribution of agricultural farm lands and manufacturing industries at the cities level as at 1989, indicates that there are market concentration of manufacturing establishments in the Southern part

of Nigeria, especially Lagos in the Southwest. While some stable foods are found from Northeast with very little industries. Other locations of relative high concentration of industries are Kano in the North, Ibadan and Benin in the Southwest, Enugu and Port Harcourt in the Southeast. While manufacturing establishments are concentrated in several locations in the Southern part, very few are found in the Northern part of the country (Ajayi, 1998 & Aremu, 2004). Thus, that formed the basis for the choice of Adamawa State from Northeastern Nigeria for these research cannot be overemphasized.

MATERIAL AND METHODS.

The study area: Girei is one of the 21 Local Government areas of Adamawa State, situated in the North Eastern Nigeria (Fig.1), within which Sangere and Viniklang are the major towns. Population of Girei as at 2016 was 173, 500 with area of 1,040 km2 and Density of 166.8km3(NPC &NBC, 2016). Girei is located between latitude 9o11" and 9o29" East with total land mass of mass of 2.186 m2. People that are predominant in the area are: Bata, Fulani, Higgi , Margi , Kanuri, Hausa among others . Girei being the administrative capital is a town which comprise of various occupation ranging from civil service, business, farming, art and craft etc, (Adebayo and Nwagboso, 2005). Geographical Information System (GIS) was used and sketches and maps were drawn (Husain and Ismail (2008).

Data collection: Data was obtained through oral interview, administration of structured questionnaires, physical observation and interaction. 150 participants were drawn within farmers and small-scale industrialist in the study area. Summary of information on the research questionnaire for the respondents include:

(A) Personal information: Sex, type of business, settlement, location, selection of farming type and small scale industries e.g Raining or dry season farming, block mounding, dying, blacksmithing, mechanic workshop, basket weaving, food processing etc.

(B) Socio-economic information:
What inform the choice of location? is it on political basis? closeness to raw material? accessibility to main road or closeness to market? personal land or house? Does the local planning authority influence the location of farm land or industries? where do you get raw material from? how many laborers do you employ on your farm or industries? what is the total stipends paid either daily, weekly or monthly? do you have local demand / market of your products? would your products supply meets the demand in the area? etc.

(C) Economic and activity information:
How did you obtained farm land or small scale business location ?, hire, purchased or inherited ?, do you

have any farmers or small scale industries association ?, do you know or aware of any Nigeria development bank ?, have you ever applied for loan from any bank ?, if yes how much ? , what was the interest and the method of payback?, was the amount adequate?, what other source of capital do you have ? , do you pay your tax ?, indicate agencies that collect tax from you, how those the tax paying affect your business if any ?, is your business affected by noise ?, pollution, distance to main road or market, or raw material ?, recommend how your problems can be improved.

Data Analyses:

The study employed the use of both primary and secondary data. The primary data was obtained from physical and interaction with respondents, visitation to farms and business locations, administered structured questionnaire with the assistance of ADP extension officer. The secondary data was obtained from Geographical Information System of mapping study area and information from Adamawa Agricultural Development Authority and Adamawa Ministry of commerce and industries.   170 questionnaire was administered, out of which 150 was retrieved. Statistical techniques involving Analysis of Variance (ANOVA) was used for both descriptive and regression of differences among groups of means (ANOVA, 2013).

The ANOVA statistical formulas used:

$$F = MST / P\text{-}1 \quad \ldots \quad \ldots \quad .. \quad \ldots \quad \ldots \quad (1)$$

$$MST = SSE/N\text{-}P \quad ... \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

$$SSE = \sum(n\text{-}1)s^2 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

Where:,

|		
F	=	ANOVA Coefficient
MSB	=	Mean sum of squares between the groups
MSW	=	Mean sum of squares within the groups
MSE	=	Mean sum of squares due to error
SST	=	Total sum of squares
P	=	Total number of populations
n	=	Total number of samples in a population
SSW	=	Sum of squares within the groups
SSB	=	Sum of squares between the groups
SSE	=	Sum of squares due to error
s	=	Standard deviation of the sample
N	=	Total number of observation
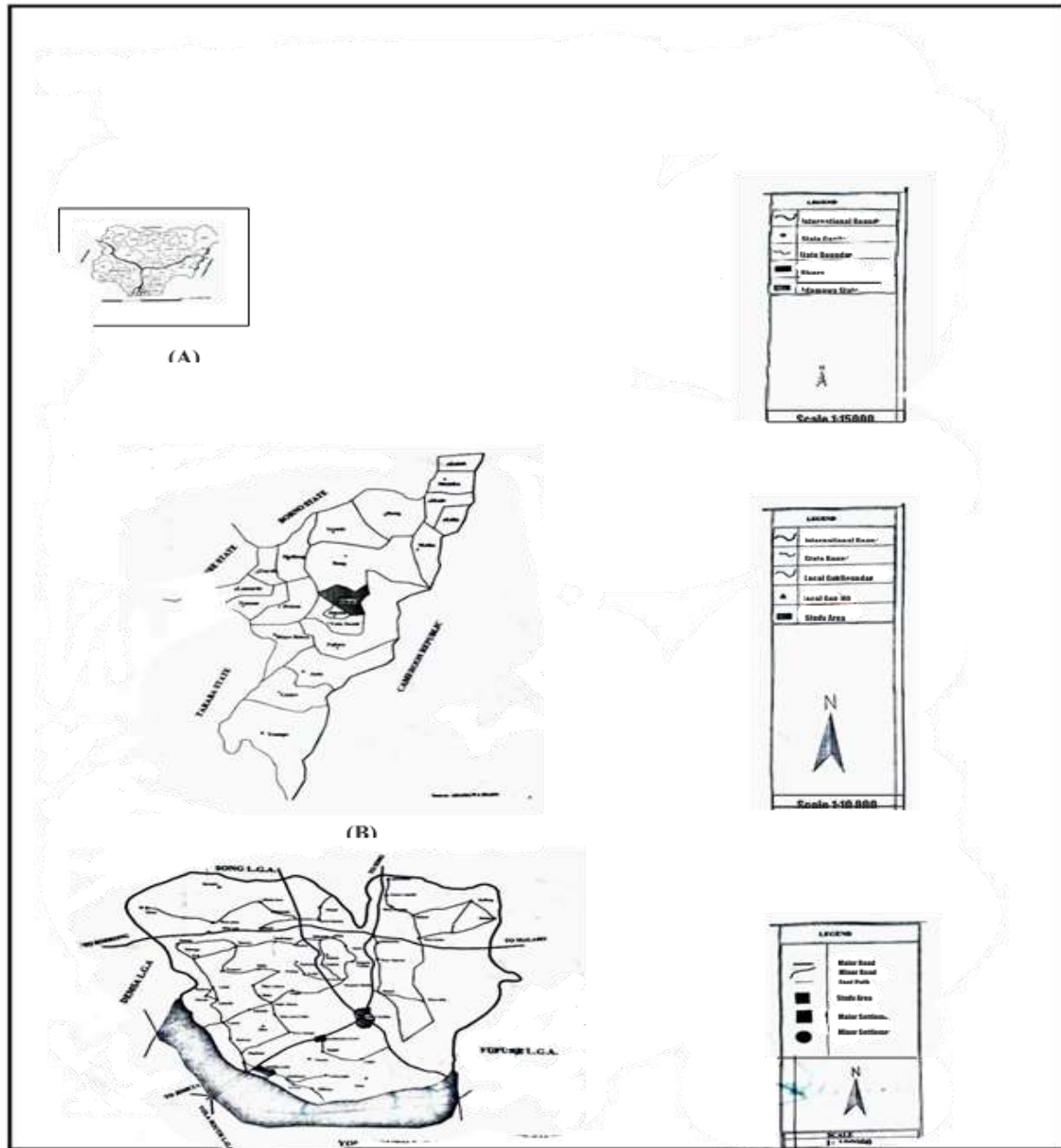
FIG 1. (A, B & C). Ma of Nigeria, Adamawa State and Girei IGA, showing Study Area.

FIG. 1: (A. B & C) SHOWS: MAP OF NIGERIA. ADAMAWA STATE AND GIREI THE STUDY AREA

RESULTS AND DISCUSSION:

Summary of farming and industrial activities are presented in Table 1, Fig. 2 (Girei village), Fig.3. (Sangere) and Fig. 4 (Viniklang). The results shows that Bajabure industrial complex is the only commercial industries in the study areas with highest number of activities of 70. Despite the area mass and density of 1, 040km^2 and 166.8km^3 respectively. Investors need to explore the opportunity and invest in the study area.

Table 1: Shows the identification of small scale industries and farm activities within study areas.

Location	Identified farm land and small scale industries	No. of employee in various sectors	No. of questionnaire administered	No. of available activities in each location	No. of respondents	Percentage of responses
Girei village	Raining season farming	30	50	56	25	
	Dry season farming	25		45	20	
	Postharvest processing	20		50	17	
	Fish smoking	19		28	10	
	Block industry	21		19	15	
	Panel beating	17		17	05	
	Blacksmithing	10		06	02	
	Dyeing	8		08	03	
	Pottery	10		16	05	
	Mechanics	15		10	10	
	Basket waving	18		20	08	
	Welding	20		25	14	
	Cap weaving					
Total					50	
Sangere	Raining season farming	30	50	52	25	
	Dry season farming	25		42	20	
	Postharvest processing	20		50	17	
	Block industry	19		28	10	
	Panel beating	21		17b	15	
	Blacksmithing	17		17	05	
	Dyeing	10		06	02	
	Pottery	8		08	03	
	Mechanics	10		16	05	
	Basket waving	15		10	10	
	Welding	18		18	08	
	Cap weaving	20		20	14	
	Fishing	11		10		
	Akrah friying					
Total					50	

Viniklang	Bajabure industrial complex	30	50	70	32	
	Raining season farming					
	Dry season farming	25		45	20	
	Postharvest processing	20		51	17	
	Block industry	19		28	10	
	Panel beating	21		19	15	
	Blacksmithing	17		17	05	
	Dyeing	10		10	02	
	Pottery	8		08	03	
	Mechanics	10		16	05	
	Basket waving	15		10	10	
	Welding	18		20	08	
	Cap weaving	20		25	14	
	Akra frying	17		10	09	
Total				50		
Grand Total				150		

Table 2, presented sources of capital and availability of raw materials. The results shows personal savings has the highest of 73.3 % while 6.7 % for the lowest. However, Fig 3 shows that Sangere has higher residential area than farming and business activities. However, some industrial activities like bread making, block mounding, post-harvest and fish smoking are the occupation of the majority of the subjects. This agrees with Adebayo and Nwagboso (2005).
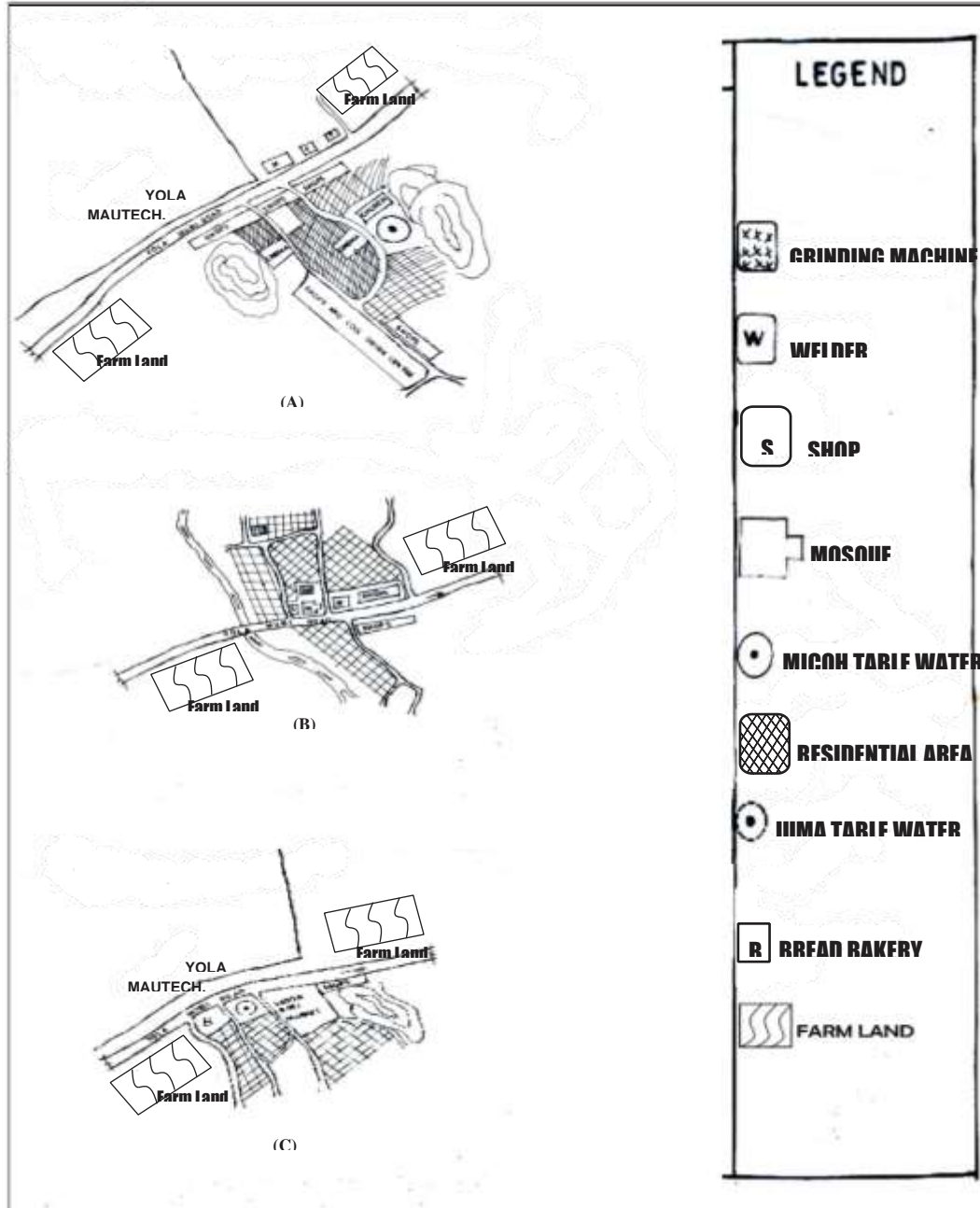
FIG. 3. (A, B & C) SKETCH OF SANGERE SHOWING THE LOCATION OF INDUSTRIES AND FARM LAND.

FIG. 2: (A. B & C) SHOWS SKECTHES OF GIREI, LOCATIONS, RESIDENTIAL, FARM LAND AND SMALL SCALE INDUSTRIES
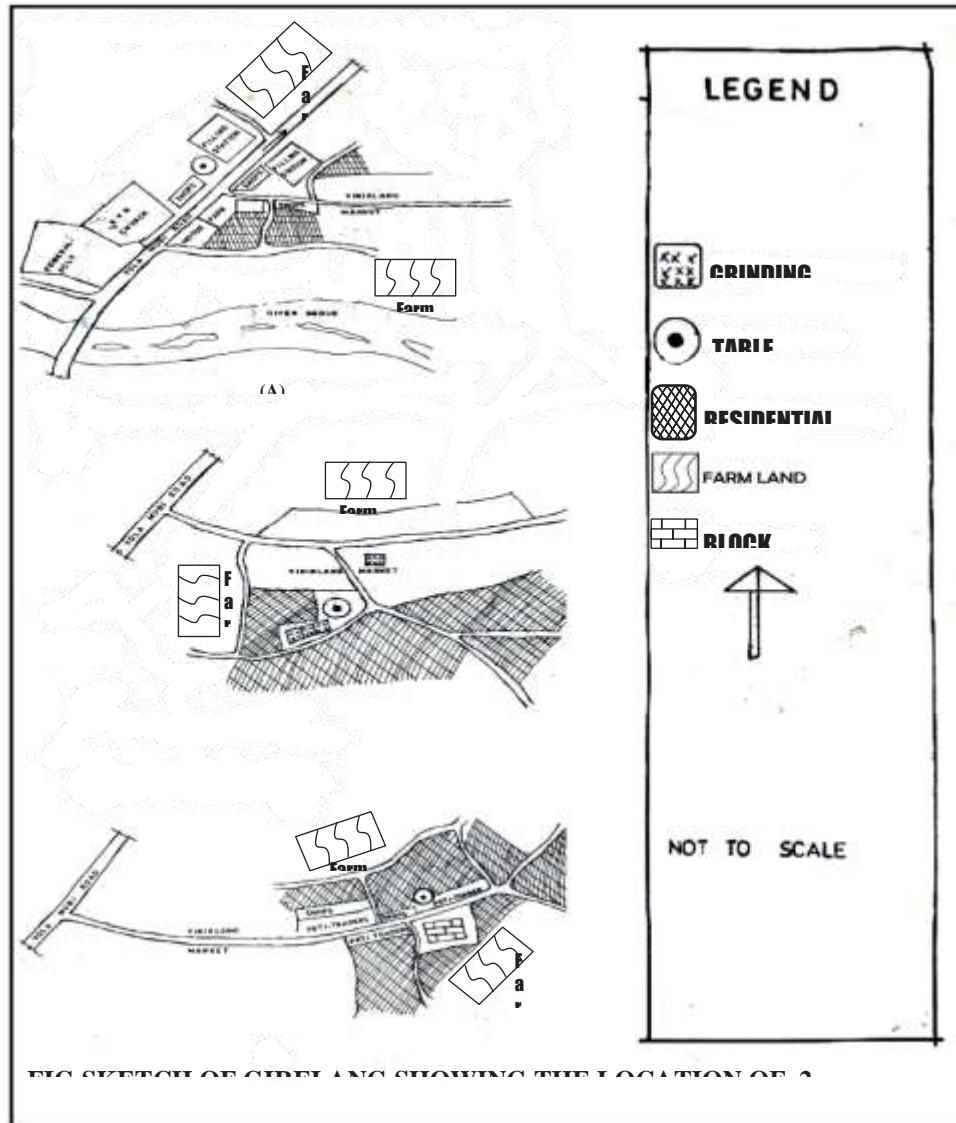
FIG. 3: (A. B & C) SHOWS SKECTHES IN SANGERE , LOCATIONS, RESIDENTIAL, FARM LAND AND SMALL SCALE INDUSTRIES
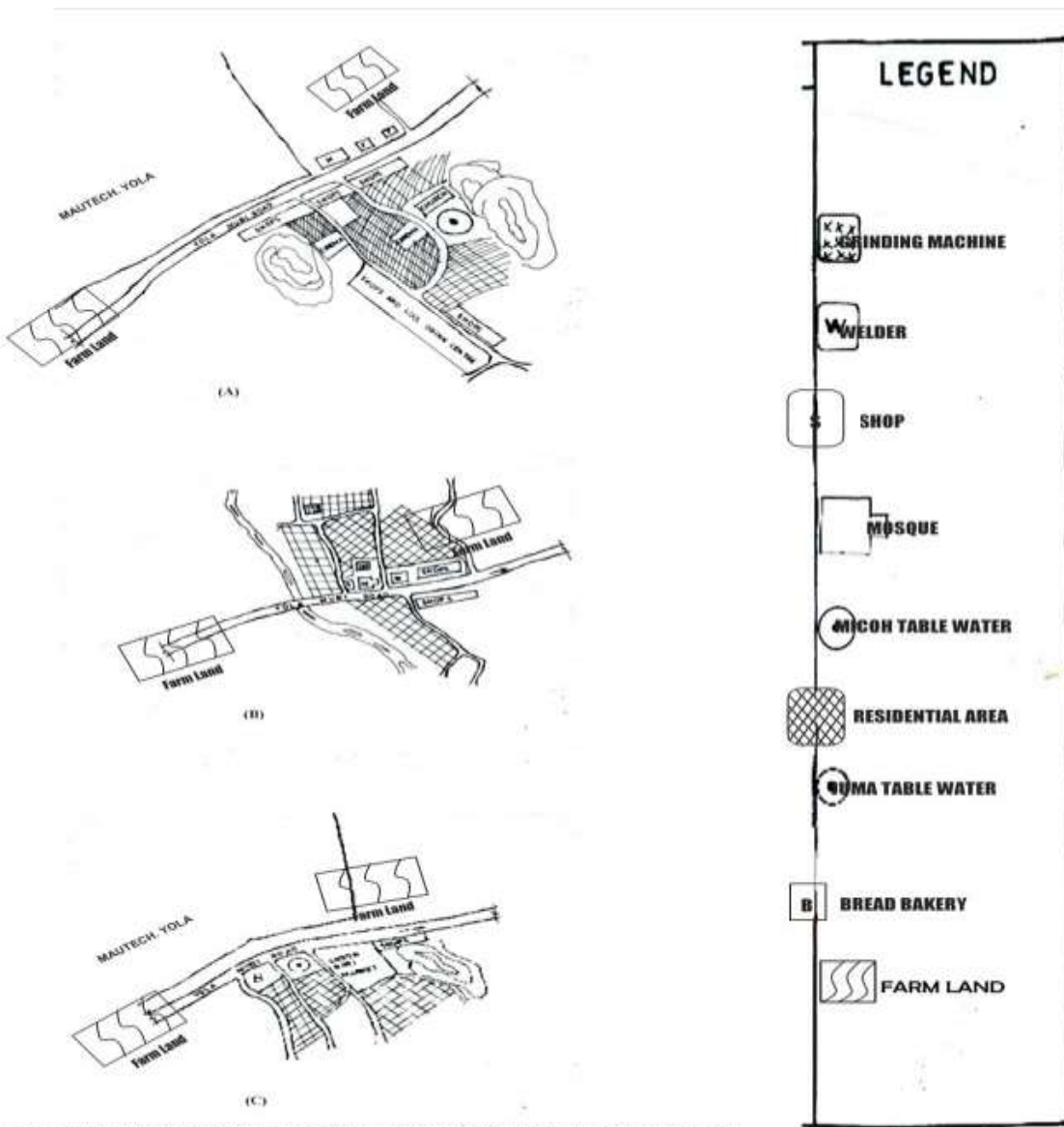
FIG. 4, (A, B & C) SKETCH OF SANGERE SHOWING THE LOCATION OF INDUSTRIES AND FARM LAND.

FIG. 4: (A. B & C) SHOWS SKECTHES IN VINIKLANG, LOCATION, RESIDENTIAL, FARM LAND AND SMALL SCALE INDUSTRIES

Table 2: Source of capital start off and raw materials   for farming business and small scale industries.

Source of finance	No. of Respondents	Percentage (%)
Personal saving	110	73.3
Loan from cooperative society	25	16.7
Loan from government	15	10
Total	150	100
Source of raw materials		
Within Girei LGA	100	66.7
From neighboring town	28	18.6
Within Adamawa State	12	08
Others sources	10	6.7
Total	150	100

Reasons for location of business activities and problems encountered is presented in Table3. Lack of credit facilities and poverty are the major problem. Inappropriate record keeping of finances was second problem. Fig.4 shows that farming and business activities is greater in Viniklang than Girei and Sangere. . Hence, most of the river band in the area are into raining and dry season farming.

Table 3: Reasons for location of farm land / small scale industries / problems encountered.

Reasons for locations:	No. of Respondents	Percentage (%)
Closeness to farm land /infrastructural facilities (Specific type)	30	20.0
Cultural and political reasons	22	14.7
Closeness to raw material	40	26.7
Accessibility / closeness to road/ market	15	10.0
Accessibility / closeness to road/ labour	18	12.0
Inherited / personal / purchased land or house	11	7.3
Cheap rent /own dwelling	14	9.3
Total	150	100
Problems encountered:		
Lack of infrastructural facilities (access road, social amenities) etc.	35	23.3
Lack of credit facilities / market problems e.g poverty	35	23.3
Inadequate, inappropriate intermediate technology.	15	10
Lack of skilled labour	14	9.3
Inappropriate record keeping of finances	18	12
Political instability	13	8.7

Total	150	100

REFERENCES:

Adebayo, A.A. and Nwagboso, N.K. (2005), Climate and Agricultural planning in Adamawa State. Agriculture in Adamawa state, first edition. Edited by Igwe, C. E.; Mshelia, S.I & Jada, M. Y. Paraclete Publisher Yola, Nigeria. Pp. 10-21.

Adamu, F.A. (2019). Fundamental for Engineers in Society Edited by: J. O. Ohu, P. B. Onaji and W. D. Gundiri, 3nd Edition Paraclete Publishers, Yola – Nigeria.

AD ADP, 2004: Adamawa State Agricultural Development Programme (AD ADP) Documentary on Women Grouping and Agricultural Activities in Adamawa Agricultural Development Programme.

Ajayi, D.D. (1998), Spatial Patterns of Production Subcontracting in Nigeria. A case study of Lagos Region. PhD Thesis, Submitted to the Department of Geography, University of Ibadan, pg. 221.

Ajayi, D.D. (2002), Temporal Pattern of Production Subcontracting in Nigeria. Annals of Social Science Academy of Nigeria. Number 14 & 15: 67-81.

Ajayi, D.D. (2001), Industrial Subcontracting Linkages in Lagos Region Nigeria. The Nigerian Journal of Economic and Social Studies (NJESS) Vol.43(2)265-277.

Aremu, M.A. (2004), Small Scale Enterprises: Panacea to poverty problem in Nigeria. Journal of Enterprises.

Ayeni, B. (1981), The partial Distribution of Manufacturing Industries in Nigeria, Ibadan: Technical Report Number 2, Department of Geography, University of Ibadan.

ANOVA (2013), Statistics Solutions. http://www.statisticssolution.com/academic-solutions/resources/directory-of-statistical-analyses/anova/.Statistics (NPC & NBS) http://www.citypopulation.de/php.ng. Accessed on 22nd September, 2020.

Husain, M.A. (2012), Land compensation Problems in Relation to Urban Planning in Yola, Adamawa State, Nigeria. Journal of Engineering and Environmental Studies, Volume 3 No. 2 pp. 72-80 .

Husain, M.A. and Ismail, A. B. (2008), The use of GIS for Decision Taking: Implications on Planning Related Agencies in Adamawa State, Journal of Technology and Development.

Igbeka, J. C., 2003: Review and Appraisal of the Agricultural Policy for Nigeria in Relation to Post Harvest Technology.

Proceedings of Fourth International Conference and 25th AGM of NIAE. Volume 25, 2003

Maunde, F. A.; Abba, A. H. & Adamu, S.M. (2004). Comparative Analysis of Oxens and Donkeys for Ploughing and Carrying Loads. Journal of Agricultural Technology, Journal of League of Researchers in Nigeria (LBN) Publication Abubakar Tafawa Balewa University (ATBU), Bauchi. Vol. 5, No. 1, pp. 87 – 96.

Maunde, F. A. & Sajo, A. A. (2003). Effect of Fertilization on Maize Yield at Sangere, Girei Local Govt. Loads. Journal of League of Researchers in Nigeria, (LBN) Publication ATBU, Bauchi. Vol. 4, No. 2, pp.

38-46.

Maunde, F. A.; Ali, M.A. & El- Okene , A.(2005) Appropriate Post- Harvest Threshing Technologies in Adamawa State. Agriculture in Adamawa State, 1st edition, Edited by E.C. Egwe, S. T. Mshellia and M. Y. Jada. pp. 311 – 324. Paraclete Publishers – Yola.

National population Commission of Nigeria and National Bureau (2016).

Oduwale, J. (1989), The rise of Industrialization in Lagos Area. In Adefuye et al .eds. History of Lagos State People. Lagos. Literamed Ltd.

Onwualu, A. P., 2003: Bridging the Digital Divide: Removing the Constrains to Adoption of Information and Communication Technology in Rural Nigeria. Proceedings of Fourth International Conference and 25th AGM of NIAE. Volume 25, 2003.