



# Impact of Piggery on Poverty Reduction in Michika Local Government Area

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**ABSTRACT:** *This study examines the impact of piggery on poverty reduction in Michika local government area. The study used primary data collected through the use of well-structured questionnaire. The data were analyzed with the use of simple percentages, descriptive statistics, correlation analysis and Ordinary Least Square regression analysis (OLS). The result of the correlation analysis showed a positive relationship between annual income from pig farming and poverty reduction while pig feed expenditure and pig health expenditure affect it negatively. The outcome of the OLS regression analysis revealed that pig farming is statistically significant in influencing annual income from pig farming which is an indication of reduction in poverty as income increases. The study therefore, suggested that government initiatives focus on enhancing the availability of inputs like pig feed and healthcare facilities at a lower, more reasonable cost, as well as effective and efficient extension services.*

**KEYWORDS:** *OLS, Piggery, Poverty Reduction, Healthcare, Farming, Michika.*

## INTRODUCTION

Livestock sustains the lives and nutritional well-being of almost a billion people worldwide and accounts for 40% of the value of agricultural production (Food and Agricultural Organization [FAO], 2009). One of the agricultural economy's fastest-growing segments is the cattle industry, which is fueled by rising incomes and aided by structural and technical advancements. Opportunities for improvements in food security, poverty alleviation, and agricultural development are presented by the sector's expansion and change (FAO, 2009).

In Nigeria, raising pigs is a significant part of the livestock subsector within the broader agricultural industry. There is a great chance that pig farming will result in significant financial rewards (Ezeibe, 2010). Swine are an excellent species to widely reproduce in order to counteract protein shortages since they have some distinct advantages over other animals (Oguniyi & Omotoso, 2011).

A significant portion of the global population has been driving the tremendous rise in livestock output in recent decades by increasing their demand for items derived from animals. Worldwide, there is a strong correlation between pig farming and economic growth, livelihoods, and food security (FAO, 2009). According to FAO (2012), Pork is the most popular meat in the world, making over 40% of all meat consumed. Chicken comes in second place (29%) to pig, then beef (24%) and turkey (2%), with the remaining 5% going to other sources. Providing a fair and secure environment, enough food, clean water, safe housing, energy, an educated populace, and fulfilling employment for both the current and future

generations is one of the world's greatest difficulties. Poverty has been defined as the inability to satisfy one's basic needs (Bwamwojo, 2013). In "Problems of Capital Formation in Underdeveloped Countries," poverty is characterized as the fundamental cause of underdevelopment as a in underdeveloped nations (Nurkse 1957).

Considering its abundance of natural and human resources, Nigeria has an alarmingly high poverty rate. According to World Bank data from 2007, a significant portion of Nigerians are living below the country's poverty line. In tackling the topic of poverty in Nigeria, Udofia and Essang (2015) pointed out that the majority of poverty in Nigeria occurs in rural areas, with agriculture being identified as the sector that might have the most impact on the impoverished due to its centrality to rural communities' lives. In recent years, agriculture has been recognized as a major development engine with the ability to significantly lower poverty among Nigerians.

Despite the oil sector's enviable position in the Nigerian economy during the last three decades, the country's agriculture sector which employs 65 percent of the labor population and produces between 30 and 42 percent of food and cash crops is perhaps the most stable (Emeka 2007). It is thought to make up the biggest portion of foreign currency profits from sources other than oil. This indicates that there is a great deal of promise for agriculture to help end poverty. Nigeria's economy may plausibly be characterized as an agricultural economy since the sector was the main driver of the country's total economic development (Ogen, 2003).

Poverty reduction requires economic progress, but growth's capacity to do so is reinforced and expedited when income distribution is equal and the poor are allowed to engage in the more lucrative economic activities. Focusing alone on fast aggregate economic development will not enough to reduce poverty in emerging nations quickly; equalization of the opportunities available to the poor and their ability to take advantage of them must also be eliminated. development must provide income benefits for the poor via an inclusive development process, encouraging demand and market participation for enterprises that heavily use the resources (mostly labor) of the poor. Only then can growth be considered pro-poor (FAO, 2012).

In the Adamawa State local government area of Michika, almost 50% of the population engages in pig farming. Most farmers in this region use an intensive technique of animal raising when they raise pigs. Upon reaching adulthood, the majority of farmers raise pigs for sale. Given that pigs are more prolific and develop more quickly than cattle, sheep, or goats, growing pigs has been shown to be one of the quickest methods to increase animal protein (Ajala, Adesehinwa and Mohammed 2007). Furthermore, pigs are efficient at converting feed into meat (Midau, 2011). It is impossible to overstate the importance of small-holder pig farmers to the local administration of Michika. It now serves as a source of food for humans as well as a means of employment and revenue generating.

The development of the small-holder pig operation in Michika local government area continues to be constrained by social, economic, and environmental concerns, despite the potential that pig farming offers to farmers and the wider economy. The impact of the primary restrictions and personal traits of pig caretakers on pig productivity has received little to no research attention. In light of this, the study examines at how pig farming affects the local government area of Michika in terms of reducing poverty. It also identifies issues related to pig farming and suggests ways to address them.

## **MATERIALS AND METHODS**

### *Study Area*

Michika (Mwe-cika) is a Local Government Area of Adamawa State, Nigeria (Yame, 2016). It is situated just over the border in Cameroon from the well-known tourist destination of

Rhumsiki. The Kamwe individuals and their language are the predominant ethnic group and language of Michika.

In 1976, the Michika local government was established. It is situated on the state's northern axis and has the Republic of Cameroon to its east. Its northern boundary is shared with the Madagali local government, while its western boundary is shared with Borno State's Askira/Uba local government area. The Mubi North and Hong local government districts border it on the south. The distorted variant of the Kamwe term for "Mwe-ci-ka," which means "creeping in silently," is called "Michika." Michika (Mwecika), according to oral tradition, was established in the latter part of the seventeenth century by Kwada Kwakaa, an emperor and hunter who lived in the Michika highlands. In the Kamwe language, "Mwe" denotes heaven, sky, mountain ranges, or even mountains. Grieving relatives sometimes wear "Mwe" around their wrists and waists as a symbol of their loss. In Adamawa State, the Michika local government has the largest population. Michika is a multicultural town as well; it was home to several bank branches before the Boko attacked, as well as a technical college, an institution of health and technology, and numerous secondary schools. The Government Senior Secondary School (G.S.S.) Michika was the most well-known and established secondary school in the area. The majority of the population is Christian, with a small minority of Muslims and adherents of other traditional religions. The mountain ranges are surrounded by around 84 communities and 26 chiefdoms (Adamawa State Nigeria, Population Statistics, 2020)

#### *Population of the Study*

The population of the study comprise of all the pig farmers in Michika local government area of Adamawa State.

#### *Sources and Methods of Data Collection*

Basically, the data for this research work is collected from primary sources. The data will be collected using a cross sectional survey process. A standardized structural and semi-structural questionnaire was designed and vetted/approved by the supervisor.

#### *Sample of The Study and Sampling Technique*

The researcher used stratified-clustered sampling to select 50 pig farmers as respondents from the area of study. Their responses will be used for the empirical analysis, conclusion and recommendation which will be based on the outcomes of the study.

#### *Model Specification*

This research employed the use of Ordinary Least Square (OLS) to estimate the relationship between piggery and poverty reduction in Michika Local Government Area of Adamawa State (Michika LGA) The model is stated below:

The functional relationship is stated below:

$$AIPF = f(IFPF, PFE, LHE)$$

The econometric relationship is as follows:

$$AIPF = \beta_0 + \beta_1 IFPF + \beta_2 PFE + \beta_3 PHE + \mu_i$$

Where:

AIPF = Annual income of pig farmers (proxy for poverty) in Michika LGA.

IFPF = Income from pig farming Michika LGA.

PFE = pig feed expenditure in Michika LGA.

PHE = pig health expenditure in Michika LGA.

$\beta_0$  = intercept of the regression line (i.e., constant)

$\beta_1$ ,  $\beta_2$  and  $\beta_3$  = regression coefficients to be estimated

$u_i$  = error term

A priori expectation

$$\beta_1 > 0; \beta_2 < 0 \text{ and } \beta_3 < 0;$$

This means that, piggery affects income positively, pig feed expenditure (PFE) affects income negatively, and pig health expenditure (PHE) affects income negatively. All these variables affect the annual income of pig farmers in Michika Local Government Area of Adamawa State.

#### *Technique of Analysis*

The technique of analysis adopted by the researcher in this study includes the use of simple percentages, descriptive statistics, correlation analysis to determine the degree of linear relationship among the variables of interest and the Robust OLS regression analysis to determine the impact of piggery on poverty reduction in Michika LGA.

### **DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

#### *Data Presentation*

To analyse the impact of piggery on poverty reduction in Michika local government area, primary data was used for the variables of the model in this study which was collected using well-structured questionnaires fifty (50) questionnaires were distributed and all were returned successfully. The variables in the model of this study includes: annual income from pig farming, income from pig farming, pigfeed expenditure and pig health expenditure. Fifty questionnaires were distributed but only forty-six were brought successfully, the data analysis of this study therefore will be based on the forty questionnaires.

#### *Data Analysis and Interpretation*

This is the process of conveying meaning to the collected information and determining the conclusions, significance and implications of the findings of the study.

#### **Section A: Socio economic characteristics**

**Table 1: Based on gender**

| <b>Sex</b>   | <b>Frequency</b> | <b>Percentage (%)</b> |
|--------------|------------------|-----------------------|
| Female       | 11               | 24                    |
| Male         | 35               | 76                    |
| <b>Total</b> | <b>46</b>        | <b>100</b>            |

[Source: Field Survey, (2023)]

From Table 1, it is observed that majority of the respondents are male with 76%, while females are 24%.

**Table 2: Age of respondents**

| Age (Years)  | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| 20-30        | 7         | 15             |
| 31-40        | 13        | 28             |
| 41-50        | 20        | 44             |
| 51-60        | 6         | 13             |
| <b>Total</b> | <b>46</b> | <b>100</b>     |

[Source: Field Survey, (2023)]

From Table 2 above, it is clear that majority of the age respondents are within the ages of 41–50 with 44%, 31–40 with 28, 20–30 with 15% and finally 51 and above covered 13% of the population.

**Table 3: Marital status**

| Status       | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| Single       | 8         | 17             |
| Married      | 30        | 65             |
| Divorced     | 6         | 13             |
| Widowed      | 2         | 4              |
| <b>Total</b> | <b>46</b> | <b>100</b>     |

[Source: Field Survey, (2023)]

From Table 3, majority of the respondents are married with 65%, singles with 17%, divorced 13% and widowed 4%.

**Table 4: Educational qualification**

| Qualification | Frequency | Percentage (%) |
|---------------|-----------|----------------|
| FLSC          | 15        | 33             |
| SSCE          | 14        | 30             |
| B.Sc/HND      | 6         | 13             |
| M.Sc. above   | 11        | 24             |
| <b>Total</b>  | <b>46</b> | <b>100</b>     |

[Source: Field Survey, (2023)]

From Table 4, majority of the respondents are primary school certificate holders with 33%, SSCE holders with 30%, B.Sc/HND holders with 13%, and MSc and above with 24%.

**Table 5: Number of years rearing pigs**

| Status       | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| 1-4 years    | 23        | 50             |
| 5-9 years    | 19        | 20             |
| 10-14 years  | 8         | 17             |
| 15 and above | 6         | 13             |
| <b>Total</b> | <b>46</b> | <b>100</b>     |

[Source: Field Survey, (2023)]

From Table 5, majority of the respondents have been into pig farming for less than four years, 20% have been in the system for five to nine years, 17% for 10 to 14 years and only 13% have been rearing pig for over 15 years.

**Table 6: Category of farms**

| Status       | Frequency | Percentage (%) |
|--------------|-----------|----------------|
| Small Scale  | 38        | 83             |
| Medium Scale | 5         | 11             |
| Large Scale  | 3         | 6              |
| <b>Total</b> | <b>46</b> | <b>100</b>     |

[Source: Field Survey, (2023)]

From Table 6, majority of the respondents operate on a small scale covering 83% of the respondents, 11% operate on a medium scale and only 6 % operate on a large scale.

**Descriptive Analysis:**

The descriptive statistics was shown to describe the mean, median, maximum, minimum and standard deviation value of the variables of the model.

**Table 7: Descriptive statistics results**

|           | AIPF     | IFPF     | PFE      | PHE      |
|-----------|----------|----------|----------|----------|
| Mean      | 0.934783 | 0.782609 | 0.347826 | 0.152174 |
| Median    | 1.000000 | 1.000000 | 0.000000 | 0.000000 |
| Maximum   | 1.000000 | 1.000000 | 1.000000 | 1.000000 |
| Minimum   | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| Std. Dev. | 0.249637 | 0.417029 | 0.481543 | 0.363158 |

|              |           |           |          |          |
|--------------|-----------|-----------|----------|----------|
| Skewness     | -3.521804 | -1.370320 | 0.639010 | 1.936728 |
| Kurtosis     | 13.40310  | 2.877778  | 1.408333 | 4.750916 |
|              |           |           |          |          |
| Jarque-Bera  | 302.5207  | 14.42493  | 7.986244 | 34.63296 |
| Probability  | 0.000000  | 0.000737  | 0.018442 | 0.000000 |
|              |           |           |          |          |
| Sum          | 43.00000  | 36.00000  | 16.00000 | 7.000000 |
| Sum Sq. Dev. | 2.804348  | 7.826087  | 10.43478 | 5.934783 |
|              |           |           |          |          |
| Observation  | 46        | 46        | 46       | 46       |

[Source: Authors Computation using E-views 9]

Based on the descriptive statistics result, annual income from pig farming, income from pig farming, pig feed expenditure and pig health expenditure have a mean value of 0.934783, 0.782609, 0.347826 and 0.152174 respectively. Furthermore, the maximum of annual income from pig farming, income from pig farming, pig feed expenditure and pig health expenditure are 1.000000, 1.000000, 1.000000 and 1.000000. While the minimum values are 0.000000, 0.000000, 0.000000 and 0.000000 respectively.

The standard deviation of annual income from pig farming and income from pig farming given as 0.249637 and 0.417029 and are negatively skewed while pig feed expenditure and pig health expenditure being 0.481543 and 0.363158 are positively skewed. However, the probability value of the Jarque-Bera statistics for annual income from pig farming, income from pig farming, pig feed expenditure and pig health expenditure 0.000000, 0.000737, 0.018442 as well as 0.000000 suggest that the variable is normally distributed at 5% level of significance.

#### Correlation Analysis:

The purpose of the correlation study was to find the linear connection between the variables.

**Table 8: Correlation Analysis Result**

|      | <b>AIPF</b> | <b>IFPF</b> | <b>PFE</b> | <b>PHE</b> |
|------|-------------|-------------|------------|------------|
| AIPF | 1.000000    |             |            |            |
| IFPF | 0.287704    | 1.000000    |            |            |
| PFE  | -0.176822   | -0.057735   | 1.000000   |            |
| PHE  | -0.133218   | 0.076556    | -0.182323  | 1.000000   |

[Source: Authors Computation using E-views 9]

The outcome of correlation matrix reveals that income from pig farming has a positive linear relationship with annual income from pig farming as indicated by the correlation coefficient 0.287704, there is a negative linear relationship between pig feed expenditure and annual income from pig farming as indicated by the correlation coefficient -0.176822. Lastly, pig health expenditure has a weak negative linear relationship with annual income from pig farming as indicated by the correlation coefficient -0.133218.

#### OLS Regression Analysis:

The variables of the model were subjected to the OLS regression analysis to check for the effect of the independent variable on the dependent variable.

**Table 9: OLS regression analysis result extract**

|                               |                          |                |               |
|-------------------------------|--------------------------|----------------|---------------|
| AIPF =                        | 0.853535 + 0.174242 IFPF | - 0.101010 PFE | - 0.131313PHE |
| SE =                          | (0.082671) (0.085813)    | (0.075362)     | (0.100056)    |
| T. Stat =                     | 10.32446 2.030478        | -1.340337      | -1.312401     |
| Prob. =                       | 0.0000 0.0487            | 0.1873         | 0.1965        |
| R-squared = 0.143646          |                          |                |               |
| Prob(F-statistic) = 0.086227  |                          |                |               |
| Durbin-Watson stat = 2.000000 |                          |                |               |

*[Source: Author's Computation using E-views 9]*

The result of the OLS analysis revealed that income from pig farming has a significant positive impact on annual income from pig farming which is in line with the apriori expectation stated in chapter three. While pig feed expenditure and pig health expenditure have negative impact on annual income from pig farming which is also in line with the apriori expectation. The coefficient of the intercept parameter being 0.853535 implies that the actual value of annual income from pig farming will be 0.853535 where income from pig farming, pig feed expenditure and pig health expenditure are held constant at zero.

Income from pig farming is statistically significant in influencing annual income from pig farming at 5% level of significance as suggested by the probability value 0.0487. The coefficient of income from pig farming being 0.174242 implies that an increase in the income from pig farming by 1 percentage/unit will lead to an increase in annual income from pig farming by 0.174242 units where pig feed expenditure and pig health expenditure are held constant.

Pig feed expenditure is not statistically significant in influencing annual income from pig farming at 5% level of significance as suggested by the t-statistics value 0.1873. The coefficient of pig feed expenditure being -0.101010 implies that an increase in pig feed expenditure by 1 percentage/unit will lead to a decrease annual income from pig farming by - 0.101010 units where income from pig farming and pig health expenditure is held constant.

Pig health expenditure is not statistically significant in influencing annual income from pig farming at 5% level of significance as suggested by the t-statistics value 0.1965. The coefficient of pig health expenditure being -0.131313 implies that an increase in pig health expenditure by 1 percentage/unit will lead to a decrease annual income from pig farming by -0.131313 units where income from pig farming and pig feed expenditure is held constant.

The R2 of the model 0.143646 is quite low and that is usually associated with cross sectional data. The independent variables are usually related to the dependent variable. The Durbin Watson statistics value 2.000000 suggest the presence of first order positive serial auto correlation among the independent variable of the model income from pig farming, pig feed expenditure and pig health expenditure.

*Interpretation of Results*



Based on the result of the OLS regression analysis, it is revealed that income from pig farming is statistically significant in influencing annual income from pig farming at 5% level of significance. Therefore, the researcher rejects the null hypothesis which states that pig farming has no significant impact on poverty reduction in Michika local government.

### DISCUSSION OF FINDINGS

From the result of the correlation matrix annual income from pig farming has a significant and positive linear relationship with income from pig farming. Furthermore, the result of the OLS regression analysis, it is discovered that income from pig farming is statistically significant in influencing annual income from pig farming at 5% level of significance which is in line with the findings of Arianus, Zaenal and Nugroho (2017). On the other hand, pig feed expenditure and pig health expenditure are found to have negative coefficients and insignificant impacts on the dependent variable. The above study indicates the primary factor impacting yearly revenue from pig farming is the income from the farm; pig feed and pig health expenditures, on the other hand, do not significantly affect annual income from pig farming.

### CONCLUSION

Based on the findings of the study, It was determined that there is evidence linking pig husbandry to a decrease in poverty among the families examined, as measured by their income. Pig farming significantly improves the quality of life for pig farmers in the study region and creates jobs.

#### *Recommendations*

Based on the results of this study, the following recommendations were made:

- a. It is recommended that to enhance pig husbandry and the livelihood outcomes of pig keepers overall, the government need to increase understanding of pig production among all pig keepers nationwide.
- b. It is recommended that government initiatives should focus on enhancing the availability of inputs like pig feed and healthcare facilities at lower, more accessible costs, as well as efficient and successful extension services.
- c. The perception that pigs are unclean animals may be dispelled by education, awareness, and hands-on demonstration of a clean, hygienic approach to pig rearing.

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