



The Impact of Motor Tricycles on Transportation of Agricultural Produce in the Pru District of Ghana

Kojo Atta Aikins & Gilbert Senyo Akude

Department of Agricultural Engineering, College of Engineering,
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Abstract

A large proportion of agricultural production in the Pru District of the Brong Ahafo Region of Ghana occurs in rural farming communities remote from the district capital. This requires a well-developed infrastructure and means of transportation for the crops produced to be conveyed to market centres. This study was aimed at assessing the impact of the introduction of motor tricycles on the transportation of agricultural produce by farmers, middlemen/women and market women in the Pru District. About 97% of the farmers and middlemen/women are now able to have access to means of transportation within 24 hours after harvest as compared to 50% before the introduction of the motor tricycles. Also, 40.7% more of them now spend less than 1 hour during transportation while those who use between 1 and 2 hours has reduced by 28.4%. About 33 times more of the respondents are now able to transport greater quantities of their agricultural produce. It was also found that all incidents of losses have reduced significantly. As compared to previous situation, 450% more of the respondents now incur no losses on-farm while incidents of losses through thefts, bushfires, animal destruction and physical damages have all reduced by not less than 78%. About 94% of the respondents are also now able to make considerable savings in money they spent on transportation of farm produce with the introduction of motor tricycles.

Keywords: Motor tricycle, transportation, agricultural produce, Pru District, Ghana.

1. Introduction

The introduction of the Government Fertilizer Subsidy Programme (GFSP) and other programmes such as the Northern Rural Growth Programme (NRGP) into the Pru District of the Brong Ahafo Region of Ghana has helped boost agricultural production in the district. A large proportion of this production occurs in rural farming communities remote from the district capital. There are also several hectares of food crops under cultivation by the Ghana Prisons Service and other commercial farmers which produce considerable quantities of crops within the district (MoFA/IFAD/AfDB, 2012; SRID-MoFA, 2014). This requires a well developed infrastructure and means of transportation for the crops produced to be conveyed to market centres. At places where roads are impassable, transport tariffs are high and market is uncertain, progress in agriculture and consequently in rural development is limited (Filani, 2005; Tunde and Adeniyi, 2012).

Generally, the infrastructure to support the existing modes of transportation of agricultural produce in the district is inadequate (PDA, 2014). The conventional means of transportation in the district include head portage and the use of bicycles and motor cycles (Dinye, 2013). These means are resorted to because of the limited supply of transport vehicles, high transport tariffs, relatively low income of the people and deplorable road network (PDA, 2014). Furthermore, these modes are not adequate due to their limitation with the quantity of produce they can carry and the distance they can cover (Starkey *et al.*, 2002; Tunde and Adeniyi, 2012). As a result, farmers in the district are compelled to sell their produce at the farm gate to middlewomen at lower prices, thereby incurring financial losses.

In view of these challenges, the District Agricultural Development Unit (DADU) of the Ministry of Food and Agriculture (MoFA) introduced motor tricycles (also known as motor king) to the farmers (SRID-MoFA, 2014). These motor tricycles over the past few years have gained considerable patronage and are seen to have great potential in helping overcome the transportation challenges faced by farmers (Etwire *et al.*, 2014). According to Barwell (1996) and Starkey *et al.* (2002), the use of motor tricycles in some parts of Asia has helped improve access to economic and social services. They are employed to convey people from rural areas to market centres together with greater quantities of agricultural produce as well as being used by farmers to purchase fertilizer and seeds. The objectives of this study were therefore to assess the impact of these tricycles on the timeliness of transportation, quantity of produce transported and crop losses.

2. Materials and Methods

2.1 Study Area

The study was carried out in Yeji, Kachawura, Parambo/Sawaba and Prang in the Pru District. The district is located 310 km away from the north – eastern part of Sunyani, the regional capital of the Brong Ahafo Region with Yeji as its district capital. The district lies between latitudes 7°50'N and 8°22'N and longitudes 0°30'W and 1°26'W, with a land area of about 2,195 km². Adjoining districts are East Gonja District to the north, Sene District to the east, Nkoranza and Atebubu – Amanten to the south, and Kintampo North and Kintampo South to the west. Generally the topography is plain with rolling and undulating land surface. The area is well drained and the land elevation is between 60 m – 300 m above sea level (PDA, 2014). Soils are agriculturally important and support cultivation of yam, cassava, maize, rice, ground nuts, fruits and vegetables. The district experiences one major rainfall regime from July – October. Annual rainfall falls between 1400mm – 1800mm with a mean monthly temperature ranging from 24°C – 30°C and mean annual temperature ranging between 26.5°C – 27.2°C.

2.2 Data Collection and Analysis

Data was obtained through the administration of questionnaires and interviews from 23rd February, 2015 to 24th March, 2015. A total of 173 farmers, middlemen/women and market women were interviewed. Data collected was on the timeliness of access to motor tricycles, duration of transit, quantity of produce transported and crop losses due to transportation. The data were analysed using the statistical package in Microsoft Excel and Statistical Package for Social Scientist (SPSS). Results are displayed and discussed with the aid of frequency tables, pie charts and bar graphs.

3. Results and Discussion

3.1 Personal Data

Table 1 shows the age distribution of the respondents. 11% of them were less than 25 years old, 15% were within the age bracket of 25 to 34 years, those from 35 to 44 years old represented 33.5% while 12.7% of them were from 45 to 55 years old. The remaining 27.2% were above 55 years old. Also, 65.9% of them were males while 34.1% were females.

Table 1: Age distribution of respondents

Age group	Frequency	Percentage
Less than 25 years	19	11.0
25 - 34 years	27	15.6
35 - 44 years	58	33.5
45 - 55 years	22	12.7
Above 55 years	47	27.2

Figure 1 gives a breakdown of the educational background of respondents. 57.8% of them have no formal education while 37% have up to elementary/primary school level education. 1.7% have up to middle school education while the highest level of education recorded is secondary school represented by 3.5% of the responses. This gives a low literacy rate of 42.2% of the respondents. The Ghana Statistical Service reports from the 2010 Housing and Population Census that only 50.4% of the population of the Pru District are literates (GSS, 2014). Table 2 also presents the job classification of the 173 respondents. In all, 79.77% were farmers, market women/men represented 9.82% while the remaining 10.98% were middlemen/women.

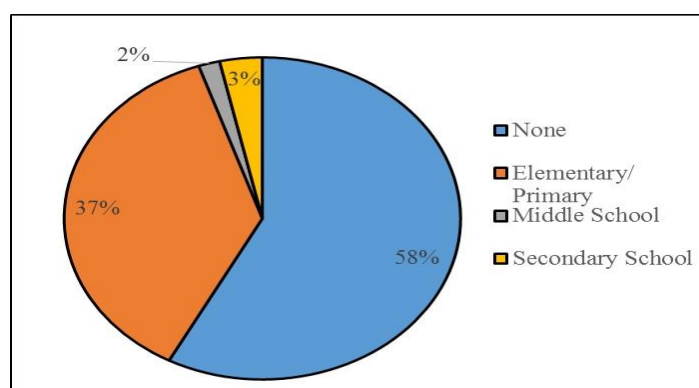


Figure 1: Educational background of respondents

Table 2: Job classification of respondents

Job classification	Frequency	Percentage
Farmer	138	79.77
Market woman/man	17	9.82
Middleman/woman	19	10.98

3.2 Crops Transported

Figure 2 presents the types of crops grown and transported in the Pru District. Yam is transported by 44 of the respondents while 40 each of the respondents transport cassava and rice. 39 of them transport maize while groundnut, cowpea, pepper and tomatoes are transported by 1, 2, 9 and 11 of the respondents respectively. It could be seen that yam accounts for the largest commodity transported followed by cassava and rice, maize and then groundnut which is in line with their production levels of 57,724 Mt, 48, 389 Mt, 7,384 Mt, 5,719 Mt and 4,097 Mt respectively in the district (SRID-MoFA, 2014).

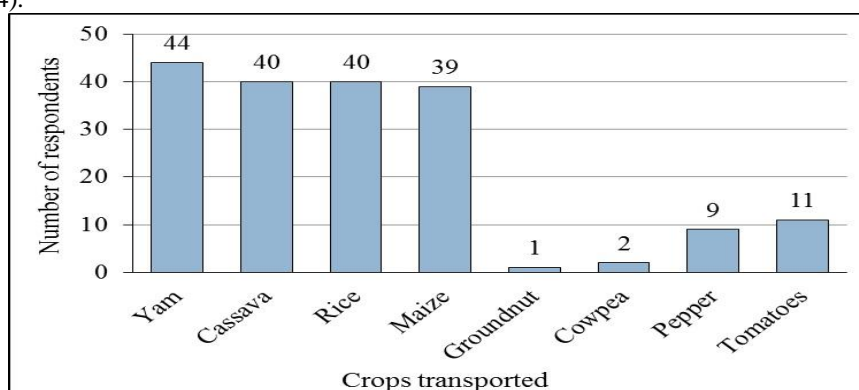


Figure 2: Crops grown and transported in the Pru District

3.3 Time Taken after Harvest to Access Means of Transport

Figure 3 compares the time taken for farmers and middlemen/women to have access to means of transportation before and after the introduction of the motor tricycles in the district. Of the 156 farmers and middlemen/women interviewed, 96.8% are now able to have access to means of transportation within 24 hours after harvest as compared to 50% before the introduction of the motor tricycles. This implies that only 3.2% of them now have delayed access (that is 2 days and beyond) to means of transportation after harvest as compared to 50% of farmers and middlemen/women previously. This is a very desirable change as post-harvest losses that occur on-farm due to delays in transportation are reduced drastically.

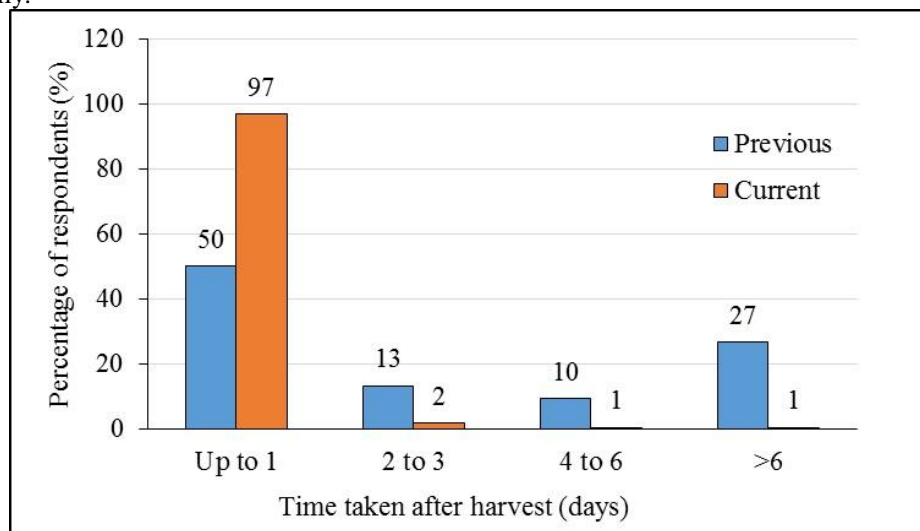


Figure 3: Responses on time taken to have access to a means of transportation before and after the introduction of motor tricycles

3.4 Duration of Transit

Table 3 compares the time taken during transportation of agricultural produce from farm gate to the market before and after the introduction of the motor tricycles. The same transportation distance was considered. The number of respondents who used up to 1 hour to transport agricultural produce has increased by 40.7% while the number of those who used between 1 and 2 hours has reduced by 28.4%. The numbers of respondents who used between 2 and 3 hours and more than 3 hours have also decreased by 6.5% and 4.8% respectively. This reveals that more of the respondents are now able to transport their produce faster than they used to, which shows an improvement in the time taken during the transportation of agricultural produce in the Pru District.

Table 3: Responses on time taken in transit before and after the introduction of motor tricycles

Time in transit (Hours)	Previous	Current	Percentage change
Up to 1	54	76	40.7
Between 1 and 2	67	48	-28.4
Between 2 and 3	31	29	-6.5
Beyond 3	21	20	-4.8

3.5 Quantity of Produce Transported

Table 4 presents a comparison between the quantities of produce transported by respondents before and after the introduction of the motor tricycles. The number of respondents who were transporting up to 50 kg of agricultural produce at a time has reduced by 82% while the number of those who were transporting 100 to 150 kg has increased by 150%. The number of respondents who were transporting more than 150 kg of agricultural produce has increased by more than 3000%. For produce such as tomatoes that are transported in crates, the number of those who were transporting less than 2 crates has reduced by 83% while those who transport 2 to 10 crates have increased by 6 times. This generally shows that most of the respondents, in addition to being able to transport their produce faster, are now able to transport a lot more of agricultural produce to the market. This enables them to put more land into production thereby increasing their yield. These improvements are very desirable as they help reduce post-harvest losses and also increase income thereby improving standard of living. Similar studies carried out by Tunde and Adeniyi (2012) and Yaro *et al.* (2014) in some farming communities in Nigeria indicate that farmers with better access to transportation are able to increase their farm size, resulting in increased production and income.

Table 4: Responses on quantities of produce transported before and after the introduction of motor tricycles

Quantity	Previous	Current	Percentage change
Up to 50 kg	83	15	-82%
100 – 150 kg	2	5	150%
More than 150 kg	3	103	3333%
Less than 2 crates	6	1	-83%
2 - 10 crates	1	7	600%

3.6 Crop Losses

Table 5 gives the responses on losses incurred by respondents in relation to transportation before and after the introduction of motor tricycles. Respondents who incur no loss of produce due to transportation have increased in number by about 450%. Incidents of losses incurred due to thefts, bush fires, destruction by animals and physical damages such as bruises and breakages have all reduced by the respective percentages of 88, 87, 86 and 78.

Table 5: Responses on transportation related losses incurred by respondents before and after the introduction of motor tricycles

Losses	Previous	Current	Percentage Change
None	28	154	450%
Theft	65	8	-88%
Bush fire	39	5	-87%
Destruction by animals	80	11	-86%
Physical damages	9	2	-78%

3.7 Savings in Income

For the reasons of the readily availability of motor tricycles, increased quantity of commodity transported and reduced incidents of losses, 94% of the respondents are now able to make considerable savings in money spent on transportation. In addition, their income is enhanced especially due to reduction in crop losses which result from delay and lack of appropriate means of transportation. Motor tricycle owners are also now able to generate considerable income. These have led to an improvement in their standard of living (Yaro *et al.*, 2014). The remaining 6% of the respondents indicated that their socioeconomic lives have not changed.

3.8 Persisting Challenges

Challenges still faced in the transportation of agricultural produce in the Pru District are shown in Table 6. All 173 respondents admitted that the roads linking rural farming communities and market centres in the district are still in deplorable conditions. This confirms the assertion made by PDA (2014) that the infrastructure to support the existing modes of transport is inadequate. About 5.8% of the respondents complained that the transportation process is still tedious, while 5.2% each of the respondents complained about delays and frequent breakdowns. High tariffs still pose problem for 4.6% of the respondents. It could therefore be seen that there is more room for improvement in the transportation of agricultural products in the district especially when the challenge of deplorable road network is solved (Hartoyo, 2013; Yaro *et al.*, 2014).

Table 6: Challenges still faced in the transportation of agricultural produce in the Pru District

Challenge	Frequency	Percentage
Bad roads	173	100
Tedium	10	5.8
Delay	9	5.2
Breakdown	9	5.2
High tariffs	8	4.6

4. Conclusion

This work was aimed at assessing the impact of the introduction of motor tricycles on the transportation of agricultural produce in the Pru District of the Brong Ahafo Region of Ghana. It could generally be concluded that there is a drastic improvement in the state of transporting agricultural produce in the district. Currently, 96.8% of farmers and middlemen/women are able to have access to means of transportation within 24 hours after harvest as compared to 50% before the introduction of the motor tricycles. Time spent during transportation has also reduced considerably while quantity of produce transported has greatly increased by up to 33 times. The respondents also indicated that all incidents of losses have reduced significantly. As compared to previous situation, 450% more of the respondents now report of no losses incurred on-farm while incidents of losses through thefts, bushfires, animal destruction and physical damages have all reduced by not less than 78%. There is also improvement in the socioeconomic lives of farmers, middlemen/ women and market women in the Pru district as 94% of them indicated they are now able to make considerable savings in money they spend on transportation and money lost through crop losses.

Looking at such a significant impact of motor tricycles on the transportation of agricultural produce in the Pru District, it is recommended that motor tricycles are consciously introduced in all farming communities across the country at subsidised rates. This has the potential to revolutionise agricultural production in Ghana. Also overcoming the challenge of poor roads should be given priority in all major food producing communities in the country.

References

- Barwell, I. (1996). Transport and the Village: Findings from African Village-Level Travel and Transport Surveys and Related Studies. World Bank Discussion Papers; No. WDP 344. Africa region series. The World Bank, Washington, D.C.
- Dinye, R. D. (2013). The Significance and Issues of Motorcycle Transport in the Urban Areas in Northern Ghana. *Scientific Journal of Review*, 2 (10), pp. 256-272.

3. Etwire, P. M., Dogbe, W., Martey, E., Owusu, R., Fearon, J. (2014). Innovative Agricultural Technology Dissemination: Finding a New Use for Motor Tricycles. *American Journal of Experimental Agriculture*, 4 (11), pp. 1288-1304.
4. Filani, M. O. (2005). *Mobility and Survival: A Nation's Dilemma*. Emmi Press International. Ibadan.
5. GSS. (2014). 2010 Population and Housing Census: District Analytical Report-Pru District. Ghana Statistical Service, Accra, Ghana.
6. Hartoyo, S. (2013). The Impact of Rural Road Rehabilitation on Rice Productivity and Farmers Income in Kemang Village, Cianjur, West Java, Indonesia. *J. ISSAAS*, 19 (2), pp. 18-29.
7. MoFA/IFAD/AfDB. (2012). Northern Rural Growth Programme Annual Report.
8. MoT. (2014). Medium Term Expenditure Framework for 2014-2016, Programme Based Budget Estimate for 2014. Ministry of Transport, Accra, Ghana.
9. PDA. (2014). The Composite budget of the Pru District Assembly for the 2014 Fiscal Year. Pru, Ghana.
10. SRID-MoFA. (2014). District Agricultural Profile. Pru District of the Brong Ahafo Region of Ghana. Statistics, Research and Development-Ministry of Food and Agriculture, Accra, Ghana.
11. Starkey, P., Ellis, S., Hine, J., Ternell, A. (2002). Improving Rural Mobility: Options for Developing Motorized and Nonmotorized Transport in Rural Areas. World Bank Technical Paper 525. World Bank, Washington DC.
12. Tunde, A. M., Adeniyi, E. E. (2012). Impact of Road Transport on Agricultural Development: A Nigerian Example. *Ethiopian Journal of Environmental Studies and Management*, 5 (3), pp. 232-238.
13. Yaro, M. A., Okon, A. E., Bisong, D. B. (2014). The Impact of Rural Transportation on Agricultural Development in Boki Local Government Area, Southern Nigeria. *Journal of Management and Sustainability*, 4 (4), pp. 125-133.