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RESEARCH ARTICLE

HIGH PRICE FLUCTUATIONS: A MAJOR MARKETING PROBLEM AND A DETERRENT TO SMALLHOLDERS' MARKET PARTICIPATION IN GHANA

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Abstract

High price fluctuations or volatilities in agricultural markets is one of the major marketing problems affecting smallholder farmers livelihood and market access in rural areas of Ghana. It is discovered to be a source of high transaction costs and risks and a deterrent to smallholder farmers market participation. This problem is associated with factors, such as poor enabling environment, lack of price standardisation system and lack of marketing information. The purpose of this study was to explore specific ways high price fluctuation impact smallholder farmers market access in Ghana to recommend possible ways of addressing this problem to improve the livelihoods of smallholder farmers. Mixed-method approach was adopted to gather data from 130 smallholder farmers, 35 key informants and 10 market agents (traders) in Bono East and Ashanti Regions of Ghana. The participants identified high price fluctuations as a major marketing problem affecting smallholder agriculture in the study areas. Also, it was discovered to be a source of high transaction costs and risks preventing market participation.

Introduction:-

Smallholder farmers play a crucial role in the Ghanaian economy. They use conventional knowledge and basic technology to account for 80% of food production in Ghana. Also, 90% of their farm holdings are less than 2 hectares in size. For example, cocoa production in Ghana is dominated by thousands of smallholder producers operating less than 2 hectares per farm. Most of the smallholder farmers are rural dwellers; 87%-89% of rural households in Ghana are engaged in crop production (Diao, 2010; MOFA, 2015). Even though smallholder farmers play a crucial role in Ghana's development, they tend to experience a lot of challenges, especially on market access. One of the challenges they encounter on their day to day farming activities is high price fluctuation (volatility or instability).[1]

Farmers all over the world are faced with constant fluctuations in the price of the crops they produce (World Bank, 2000). Huka et al., (2014:155) observes that "Price fluctuation is extremely dangerous, as farmers and other agents in the food chain risk losing their investments if prices fall." Consequently, high price fluctuations can contribute to high transaction risk in the market transaction between smallholder farmers and agents (traders).

[1] Food price instability or fluctuations refers to variation over time in the price of food (Minot, 2014).

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Since high price fluctuations can affect investment in food production, Fafchamps (2000) mentions that farmers all over the world have devised strategies to cope with price fluctuations. However, the current study discovered that many farmers in Ghana do not have coping strategies (Asibey et al., 2019) to manage high price volatility or fluctuations.

Consequently, Fafchamps claims about farmers all over the world possessing coping strategies to withstand high price fluctuations is too generalised. Moreover, smallholder farmers and stakeholders who took part in the study in Ghana mentioned that price fluctuations tend to deter smallholder farmers from market participation.

Many factors contribute to high price fluctuations of agricultural produce, however, the lack of access to market information was discovered in the current study as one of the major contributing factors to high price fluctuation. It has forced many farmers interviewed to the problem of 'low-level equilibrium poverty trap' (Doward et al., 2003; Maumbe and Okello, 2013).

Also, other factors, such as institutional constraints, or enabling environment (Antonaci, et al., 2014), lack of standardisation of prices for agricultural products further affected the ability of the smallholder farmers ability to devise coping strategies for high price fluctuations.

The purpose of this study was to explore specific ways high price fluctuation impact smallholder farmers market access in Ghana to recommend possible ways of addressing this problem to improve the livelihoods of smallholder farmers

Research Objective:-

The current article has emerged from an objective of a PhD study, which intended to verify the innovative public and private institutions' role in reducing high transaction costs and risks affecting smallholder farmers and agents (traders) marketing transactions in rural markets of Ghana.

Literature underpinnings

According to Minot (2014:46), "Food price instability refers to variation over time in the price of food." He further explains that "Instability in the price of staple foods is an important source of risk in developing countries." Kalkuhl et al., (2016:3) on the other hand think that "Price volatility describes the magnitude of price fluctuations or the risk of large, unexpected price changes." Both definitions, see price volatility or fluctuation as a risk. As a result, the definitions fit perfectly well with the current study which sees price fluctuation as a transaction risk affecting smallholder farmers market access in Ghana.

Factors promoting high price fluctuations

Several factors contribute to high price fluctuation or volatility problems in many African countries, including Ghana. For example, Dana and Gilbert (2008:1) observe that "Agricultural commodity prices are volatile because short term production and consumption elasticities are low." They go on to say that "Production responsiveness is low for annual crop commodities because planting decisions are made before prices for the new crop are known."

Even, urbanisation was discovered to be a factor contributing to high price volatility face by urban farmers in Ghana and which keep them in poverty (Asibey et al., 2019).

Kornher and Asante (2016) on the other hand attributed price volatility to strong seasonality especially in the grains markets of Africa and importation of agricultural products, such as wheat, rice, fish and poultry from industrialised countries.

It is obvious, seasonality and importation of certain agricultural produce can contribute to price fluctuation, yet lack of access to information on the ready market can contribute greatly to high price fluctuations (Barrett, 2008; Maumbe and Okello, 2013). Moreover, one of the main challenges associated with smallholder farmers in Africa is lack of access to the market is lack, or asymmetry, of information (Barrett, 2008) on the price of products, inputs, credit markets and buyers. As a consequence, many smallholder farmers depend on an unreliable source of information from informal and formal sources, such as friends, family members, including extension agents (Maumbe and Okello, 2013).

Maumbe and Okello (2013:2) mention that, "The consequences of information asymmetry are problems of moral hazard and opportunistic behaviour by traders and money lenders towards smallholder farmers." Besides, the nature of exchange process associated with it can lead to high transaction costs, which impede smallholder farmers' access to better-paying markets and can lead to entrenched poverty as smallholder farmers are a force to accept low prices for their produce in their market participation (Maumbe and Okello, 2013). The smallholder farmers in Ghana also encounter this problem. For example, they have limited access to important information on the constant changing of global food chains; this prevents them from fully maximising the value of their crops (Schalkwyk et al., 2017). Also, Antwi and Ohene-Yankyira (2017:39) discovered that "many transactions involving credit to the agricultural sector in developing countries such as Ghana involve high transaction cost because of information asymmetry."

Additionally, a lack of information especially on markets can lead to the problem of 'low-level equilibrium poverty trap' (Doward et al., 2003; Maumbe and Okello, 2013).[2] This problem forces smallholder farmers into subsistence production and access imperfect markets and trade in low volumes. It further prevents smallholder farmers from diversifying, from producing 'low value 'staples food into 'high-value crops' (Maumbe and Okello, 2013).

Research Methodology:-

The study adopted a mixed-method concurrent design. As a result, all the participants were engaged in the study at the same time. Thus, qualitative and quantitative (QUAL and QUANT) data collection methods were conducted alongside one another.

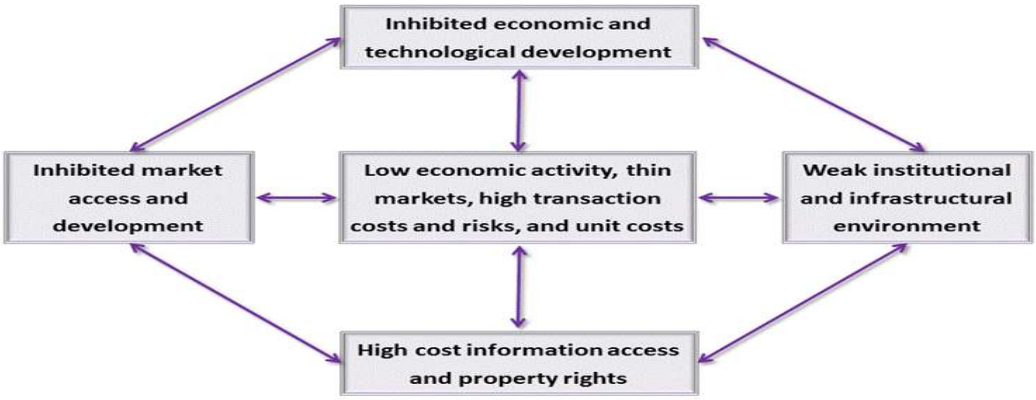

Figure 1:- Low level Equilibrium trap,
Source: Dorward et al, 2003.

There are advantages for choosing a mixed-method over other research designs in the current study. For example, the combined elements of both quantitative and qualitative research methods could help to draw from the strengths of both approaches (John, et al., 2007). Moreover, by using the integration of both quantitative and qualitative methods, a study can be benefited from additional information, whereas information obtained from only one method was found to be insufficient.

The participants came from Bono East and Ashanti Regions of Ghana. The participants in the Bono East came from Tuobodum, Aworowa, Tanoso and Asueyi. The participants in the Ashanti Region came from Akumadan, Daaban, Gyinasi, Gyinasi-Karikari farms and Kumasi-Tanoso (IPT).

[2] Dorward et al., (2003:324) interpret the low-level equilibrium trap this way: "Where economic activity is low, markets are imperfect and transaction risks high (as is the case in rural people's economic environments) transaction costs tend to be high and institutional arrangements tend to be incomplete, missing or ill-structured for poor people's livelihoods opportunities."

Sampling Design

The sampling technique used in this study is a "Mixed Purposeful" sampling. It is a combination of more than one sampling strategy for selecting participants for a research investigation. It helps to compare the outcomes emerging from both samples (Onwuegbuzie and Collins, 2007). The specific sampling strategies employed in the current study were a combination of probability and non-random sampling strategies. They include simple random and purposive sampling techniques respectively.

The participants were made of 130 smallholder farmers; 35 key informants and 10 market agents (traders). A simple random sampling technique was used to select smallholder farmers and traders who took part in the quantitative study (questionnaire interviews) study.

In terms of the qualitative study, a purposive sampling technique was used to select the key informants (participants) for both key informants' interviews and focus groups discussions (MARISCO vulnerability analysis). The purposive sampling technique offers an initial understanding of the situation under investigation, and a way to identify and differentiate the needs of one or more relevant groups (ACAPS, 2011). This is the main reason for choosing purposive sampling in the current study.

Data collection

The quantitative data was collected through a questionnaire interview with closed-ended questions. The qualitative was collected through key informants interviews and MARISCO vulnerability analysis.

Results and Discussion:-

The smallholder farmers interviewed ranked price fluctuations in agricultural produce as a major and a leading marketing problem affecting their activities. The position of price fluctuation among existing marketing problems is depicted in table 1.

Table 1:- Marketing problems encounter by smallholder farmers in Brong East and Asanti Regions.

Crosstab									
Count									
		Marketing problems encounter in farming							Total
		Poor roads	High transaction costs	Low prices/price fluctuations	Lack of transport	lack of market information	Other	All marketing problems	
Region in Ghana	Bono East Region	8	3	37	4	1	11	2	66
	Ashanti Region	1	0	35	0	0	28	0	64
Total		9	3	72	4	1	39	2	130

Table 1 reveals that 72 (55%) of the participants identified low price fluctuations as a major problem affecting smallholder, which can be a source of transaction risk affecting smallholder farmers. The second major marketing problem affecting smallholder farmers discovered by 39 (30%) of the participants is other problems not listed on the questionnaire, such as commissioner ('lead boys') activities, lack of bargaining power and unfavourable treatment of market women (traders). Also, 9 (6.9%) of the participants chose poor road networks as a challenge affecting smallholder farmers in the study areas in both Bono East and Ashanti regions of Ghana. Again, 4 (3%) of the participants identified lack of transport or absence of reliable transport system as a major marketing problem affecting smallholder farmers, especially on market access. Also, 3 (2%) of the participants mentioned high transaction costs as a marketing problem affecting smallholder farmers marketing activities. However, 2 (1.5%) of the participants claimed that all marketing challenges mentioned in the questionnaire affect smallholders' farmers in

their farming activities. The last marketing problem identified by 1 (0.8%) of the participants is the lack of market information. The participant mentioned that smallholder farmers do not have access to reliable information on prices of produce and buyers for their produce.
Similarly, market women (traders), who participated in the study identified prices fluctuations (low prices) as a leading marketing challenge affecting smallholder farmers in their attempt to access the ready market for their produce. The position of price fluctuations among the problems identified by the market women (traders) is shown in table 2:

Table 2:- Traders' view on marketing problems affecting smallholder farmers.

Crosstab							
Count							
		Market problems affecting farmers and agents					Total
		Poor roads	High transaction costs	Low prices/fluctuations	Lack of transport	6	
Region in Ghana	Bono East	2	1	1	1	0	5
	Ashanti Region	0	1	3	0	1	5
Total		2	2	4	1	1	10

Table 2 shows that price fluctuation is the biggest marketing problem affecting smallholder farmers' market access. Four (40%) of the participants saw it as a problem. The same problem came up as the biggest in the smallholder farmers interviews. The participants saw poor roads network and high transaction costs out as the second marketing problem affecting smallholder farmers. Both problems had 2 (20%) of the traders' responses respectively. Also, transport and other problems, such as commissioners' activities, were the third marketing problems affecting smallholder farmers' market access. Each of the above problems had 1 (10%) of the traders' responses.

The specific responses from participants according to their towns or villages in the Bono East and Ashanti Regions who took part in the study can be seen in table 68.

Additionally, participants were asked during the key informants' interviews about the major marketing problems encountered by the smallholder farmers and their responses are shown in table 3.

Table 3:- Marketing problems affecting smallholder farmers identified in key informants interviews.

Crosstab									
Count									
		Marketing problems for smallholders							Total
		Poor roads	Low prices/Price fluctuations for produce	Lack of market information	Other	High transport cost	Lack of ready market	Multiples marketing problems	
Region	Bonon East Region	2	5	0	3	1	1	6	18
	Ashanti Region	1	7	1	1	0	0	7	17
Total		3	12	1	4	1	1	13	35

Thirteen of the key informants claimed that smallholder farmers have many (multiple) marketing problems affecting them, including all the problems listed on the questionnaires. Out of this number, 7 responses came from key informants in the Ashanti Region and 6 responses came from the Bono East Region. The price fluctuation or low prices for smallholder farmers produce came up as the second major marketing problem faced by smallholder

farmers in both the Bono East and Ashanti Regions. In total, 12 key informants identified price fluctuations or low prices for produce. Out of this number, 7 responses came from the key informants in the Ashanti Region and 5 responses came from key informants in the Bono East Region. The third marketing problems faced by smallholder farmers were identified as others, such as commissioners and lack of storage facilities to store produce until prices are high. Out of the 4 responses for other problems, 3 of the responses came from key informants in Techiman and 1 response came from a key informant in the Ashanti Region. Poor road network came up as the fourth highest marketing problem affecting smallholder farmers market access with 3 responses. Out of the 3 responses, 2 responses came from participants in the Bono East Region and 1 response a participant in the Ashanti Region. Lack of market information (a source of high transaction costs) received 1 response from a participant in the Ashanti Region; high transport costs (a source of high transaction costs) was identified as marketing problem by a key informant in the Bono East Region and lack of ready market was identified a marketing problem affecting smallholder farmers from a key informant in the Bono East Region.

The responses of the key informants according to their towns or villages on marketing problems affecting smallholder farmers are shown in table 4.

Table 4:- Key informants' responses to marketing problems faced by smallholders at Towns or villages levels.

Crosstab									
Count									
		Marketing problems for smallholders							Total
		Poor roads	Low prices/Price fluctuations for produce	Lack of market information	Other	High transport cost	Lack of ready market	Multiples marketing problems	
Town	Techiman	0	2	0	0	1	0	3	6
	Asueyi	1	1	0	0	0	0	3	5
	Tuobodum	0	2	0	1	0	0	0	3
	Oforikurom	0	0	0	1	0	1	0	2
	Akumadan	1	0	0	1	0	0	0	2
	Gyinase	0	2	0	1	0	0	0	3
	Gyinase-Karikari farms	1	1	0	0	0	0	2	4
	Kumasi-Tanoso (IPT)	0	1	1	0	0	0	0	2
	Dabaa	0	3	0	0	0	0	5	8
Total		3	12	1	4	1	1	13	35

Out of the 13 key informants who believed smallholder farmers have multiples marketing problems, 5 of them came from Dabaa; 3 responses each came from Techiman and Asueyi and 2 responses came from key informants in Gyinase-Karikari farms. With regards to price fluctuations or low prices out of 12 responses from key informants, 3 responses came from key informants in Dabaa; 2 responses each came from Techiman, Tuobodum and Gyinase; 1 response each came participants in Asueyi, Gyinase-Karikari farms and Kumasi-Tanoso (IPT); 0 response came from key informants in both Oforikurom and Akumadan. Out of 4 key informants who mentioned other marketing problems, 1 key informant each came from Tuobodum, Oforikurom, Akumadan and Gyinase. Also, out of 3 responses for poor road network as a marketing problem, 1 response each came from key informants from Asueyi, Akumadan and Gyinase-Karikari farms. No response came from key informants in Techiman, Tuobodum, Oforikurom, Gyinase, Kumasi-Tanoso (IPT) and Dabaa. Lack of market information was identified by a key informant in Kumasi-Tanoso (IPT) as a marketing problem affecting smallholder farmers; high transport costs were identified as a marketing problem faced by smallholder farmers by a key informant in Techiman. Lastly, the lack of a ready market was identified as a marketing problem by a key informant as a problem.

Marisco situational analysis

The MARISCO situational analysis adopted in the current study revealed that smallholder farmers have other factors that facilitate high transaction costs and risks which include price fluctuations (see table 5).

Table 5:- Cause-effect web.

Threats	Criticality	Manageability	Knowledge
Price fluctuations	4	3	1
Urbanisation	4	4	1
Spoilage	4	3	1
Extreme weather pattern	4	4	2
"Lead boys" (commissioners)	4	2	4
Environmental degradation	4	4	2
Erosion	4	2	1
Bushfire	2	3	1
Illegal logging	3	2	
Contributing factors			
Corruption	4	3	1
Lack of market information	4	3	4
Lack of enforcement	4	2	2
Lack of participation in decisions	4	2	2
Lack of credit facilities	4	3	3
Poor road network	4	3	4
Lack of irrigation facilities	4	3	4
Climate change	4	2	2

Source: Author

Price fluctuations or volatility was identified in table 6 as a threat to smallholder farmers livelihoods. It was rated as 4 in its criticality under cause-effect web. Also, it scored 3 under manageability. Having criticality of 4 means that it is a serious problem but scoring 3 under manageability shows that it is not very difficult to address it. Yet, 1 under knowledge means that little is known on how high price fluctuation problem can be addressed.

Sources of information for smallholder farmers and agents market transactions

The traders' sources of information for their interactions with smallholder farmers and their responses are shown in table 6.

Table 6:- Sources of market information for market interactions between smallholder farmers and traders.

Crosstab					
Count					
		Sources of market information			Total
		Market agents/buyers	Media	Other	
Region in Ghana	Bono East Region	2	2	1	5
	Asante Region	1	0	4	5
Total		3	2	5	10

Most of the traders (market women) 5 in total mentioned that they access information from other sources to enable them to interact with smallholder farmers, such as telephone calls. Out of this number, 4 of the responses came from

the Ashanti Regions traders and 1 response came from a participant in the Bono East Region. The next highest response on sources of information for traders and smallholder farmers was agents or traders (market women) themselves. It had 3 responses in total and out of this, 2 responses came from traders (agents) in participants in the Bono East Region and 1 response came from a participant in the Ashanti Region. The least responses were received on media, such as local radio stations. Only 2 of the participants from the Bono East Region selected media as a source of information for smallholder farmers' market interactions with agents or traders (market women). No participant in the Ashanti Region responded to this question.

The method used by smallholder farmers to access market information

The methods used by smallholder farmers to access market information in Bono East and Ashanti Regions of Ghana are summarised in table 7.

Table 7:- Methods used by participants to access market information in Bono East and Ashanti Regions of Ghana.

Crosstab										
Count										
		How information is accessed by participants								Total
		Post	Telephone	Farmer group meetings	Extension officers/MOFA	Other	Market agents/buyers	None	Farm site	
Region in Ghana	Bono East Region	0	27	13	1	20	3	2	0	66
	Asante Region	2	8	0	0	45	4	0	5	64
Total		2	35	13	1	65	7	2	5	130

Table 7 shows that 65 (50%) of the participants interviewed use other methods, such as informal conversations among farmers and local gatherings to access information on markets. 45 out of the 65 responses came from Ashanti Region participants. The remaining 20 participants came from the Bono East Region.

The second method the participants use to access market information is through telephone (mobile phone). 35 of the participants mentioned that they use their mobile phone to contact buyers, their colleagues and other farmers in different locations for marketing information, such as prices for produce. Also, the 27 that responded to the use of the telephone as a method of accessing market information came from farmers in the Bono East Region. The remaining 8 participants came from the Ashanti Region. Thus, Bono East Region's smallholder farmers use more mobile phones or telephone to access market information compared to farmers in the Ashanti Region.

Farmer group meetings were observed to be the third popular method used by participants to access information on the market. 13 of the participants mostly from the Bono East confirmed they use this method to access information marketing of their farm produce.

Also, 7 of the participants mentioned that they use market women to access market information, such as current prices for their produce. Out of this number, 4 participants came from Ashanti Region and 3 came from Bono East Region.

However, 5 of the participants claimed they use farmgate (farm site) to access information on their produce. This shows that they discover market information from the interaction with buyers for their produce at farmgate.

Furthermore, 2 of the participants said that they access to market information via post. The participants mentioned that some of the transport (coaches) offer courier services and enable them to access market information on the market, especially from their customers in the capital (Accra).

Only 1 participant mentioned that the extension officers (MOFA) are the medium for accessing marketing information for the farmers produce.

Summary of findings

The key findings that emerged from the study include the following:

Smallholder farmers' major marketing problem is price fluctuations. Seventy-two (55%) of the smallholder farmers' who participated in the study (Table 1) identified it as a major problem. Also, it came on top of the marketing problems affecting smallholder farmers in the traders' interviews (Table 2); it was ranked as the highest threat in 'cause-effect web' in MARISCO analysis (table 6) and second major problem in the key informants' interviews (Table 5).

Also, absence or lack of standardised source of information on market access or ready market for smallholders agricultural farm produce contributes to high price fluctuations experiencing by farmers.

Recommendation:-

All the data collected from different data collection approaches for the current study revealed price fluctuations as a major problem affecting smallholder rural farmers in Ghana. It was observed in the field data collection that price fluctuations or volatility deters smallholders from participating in markets and as a result, it can keep them in perpetual poverty. Given this, it will be recommended that policymakers should introduce warehouse receipts systems (WRS) in rural areas in Ghana. Since WRS is known to be a modern risk management approach and practical in reducing price volatility or fluctuations with success stories in some African countries, such as Tanzania, Ethiopia and Niger (Antonaci, et al., 2014). Moreover, WRS can serve as proof of collateral for loans for smallholder farmers if it is introduced.

Second, contract farming was discovered from the participants in the current study as the best institutional innovation likely to address marketing problems, such as price fluctuations and high transaction costs. For example, contract farming has helped some smallholder farmers in Ghana through Grow Africa (Grow Africa, 2017) to access ready market, financial support and data to improve their farming activities as discussed earlier in the introduction. Consequently, it will be recommended that policymakers should enable smallholder farmers in rural areas in Ghana to access contract farming, such as that of Grow Africa project.

Conclusion:-

The smallholder farmers in Ghana encounter high price fluctuations during the marketing of their farm produce. It was discovered to be a major marketing problem in the smallholder farmers, key informants and traders interviews, including MARISCO situational analysis.

As a result, farmers have high price risk due to price fluctuations. This risk was discovered in the current study as one of the main causes of spoilage and complete market failure in rural markets in Ghana. For example, some of the farmers interviewed in Tuobodum claimed that they were unable to pay their bank loans for their farming businesses due to high price fluctuations.

Consequently, high price fluctuations contribute to high transaction costs and risks faced by smallholder farmers. Moreover, majority of the farmers interviewed and participants in the key informants and traders interviews confirmed that farmers have no coping strategies to address high price fluctuations to enable them to market their produce.

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